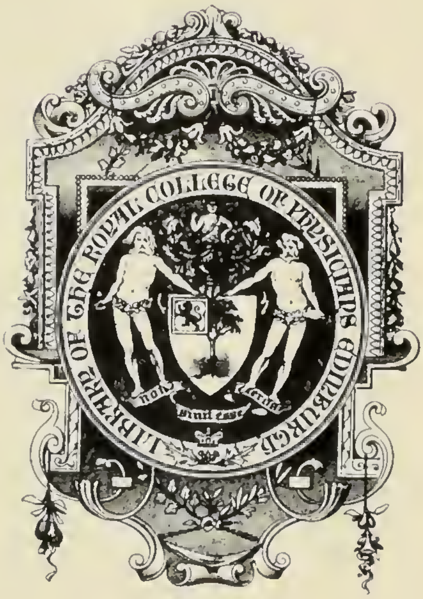
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SKETCH
OF THE
REVOLUTIONS
OF
MEDICAL SCIENCE,
AND
VIEWS
RELATING TO ITS
REFORM.

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PHILOSOPHICAL SOCIETY OF PHILADELPHIA, &c. &c.

TRANSLATED FROM THE FRENCH,
WITH NOTES,
BY A. HENDERSON, M.D.

London:

PRINTED FOR J. JOHNSON, ST. PAUL'S CHURCH-YARD; J. MURRAY,
FLEET-STREET; AND A. CONSTABLE AND CO. EDINBURGH.

By Bye and Law, St. John's Square, Clerkenwell.

1806.

> ἸΗΤΡΟΣ ΓΑΡ ΦΙΛΟΣΟΦΟΣ ἸΣΟΘΕΟΣ.
>
> Hippocrates De decenti Ornatu.

ERRATA.

Page 6, line 23, *for* indiſpenſible *read* indiſpenſable
74, — 23, *for* alſo ſtudied *read* ſtudied alſo
88, — 8, *dele the* comma *after* only
93, — 17, *for* latter *read* later
165, — 2, *dele* for *after* have
225, — 1, *for* them *read* Europe joined them
309, — 21, *for* affected *read* effected
399, — 15, *dele* us *after* obliges

ADVERTISEMENT.

THE original of the following pages was publiſhed at Paris about two years ago. The known abilities of the Author, the merits of the preſent performance, and the conviction that ſuch a work had been long wanted in Medical and Philoſophical Literature, induced me to attempt its tranſlation.—In executing my taſk, I have ſtudied to preſerve faithfully the ſenſe of the Author. I have, however, ventured to correct a few miſtakes, (relating chiefly to names and titles) into which he had fallen; and in the Notes ſubjoined at the end of the volume, I have controverted certain poſitions in the text, which ſeemed to admit of doubt, and illuſtrated others, which appeared to require explanation.

A. H.

LONDON,
Sept. 12, 1806.

PREFACE OF THE AUTHOR.

THE preſent work was compoſed during the winter of 1794-5. Garat, at preſent Member of the Senate, was at that time Commiſſioner of Public Inſtruction. Connected with him by ties of friendſhip, which time, our taſtes, our ſtudies, our common wiſhes for the progreſs of knowledge and the increaſe of the happineſs of mankind, had been conſtantly ſtrengthening and confirming, I felt particularly intereſted in the execution of the comprehenſive plan which he had formed for the improvement of all the branches of education. He judged that I might aſſiſt him in his undertaking. Some views which I had communicated to him, reſpecting the application of Analytical Methods to the ſtudy of Medicine, appeared to him both juſt and uſeful. In conſequence of his preſſing entreaties, I was induced to put them into ſome kind of order: and it then was my intention to have publiſhed them without delay.

But, as it generally happens, when we take the trouble to conſider any ſubject in all its different lights, in proportion as I collected my ideas and attempted to digeſt them, I found the work ſwell under my hands, and the ſubject acquired, in my mind, greater extent and importance. I ventured to conceive the plan of reducing all the branches of medical ſcience to very ſimple elements, by indicating, in each branch, the method which appeared the beſt calculated to guide, with certainty, its ſtudy and ſyſtem of inſtruction.

An undertaking of ſo great a magnitude, which was deſigned to exhibit the ſcience in entirely new points of view, rendered ſeveral preliminary conſiderations neceſſary: it was intended to have been preceded by an introduction, in which I thought it might be uſeful to give a rapid ſketch of the different revolutions of medicine, and to deſcribe, in a ſummary manner, the general principles which ſhould direct its reform.

This introduction is the only part which I have been able to finiſh. Till the preſent moment, I was unwilling to publiſh it, in the hope of one day accompliſhing my original deſign. But the declining ſtate of my health prevents me from indulging any longer this hope, which, perhaps, it was preſumptuous in me ever to have entertained. I have, therefore, yielded to the ſolicitations of ſome of my friends, in ſubmitting this imperfect ſketch to the public. I certainly ſhould have deſired to render it more worthy of their acceptance: but the ſame reaſon which induces me to commit my work to the preſs, has deprived me of the courage and the means of perfecting it. Such as it is, it will be found, I believe, to contain ſome uſeful ideas: and this belief has been ſufficient to overcome my ſcruples with reſpect to its publication, which, perhaps, would have prompted me to conſign it to oblivion. If our young ſtudents, for whoſe uſe it is particularly deſtined, ſhould derive any benefit from its peruſal, the ſatisfaction of having aſſiſted them in their labours will amply reward me for my trouble.

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SKETCH

OF THE

REVOLUTIONS

OF

MEDICAL SCIENCE, &c.

DESIGN OF THE WORK.

IN proportion as the boundaries of the Sciences are extended, it becomes more requiſite to improve the methods of arrangement and inſtruction. To the ſciences of obſervation this remark is peculiarly applicable. The mind ſoon finds itſelf loſt in the multiplicity of the facts which have been collected, if the genius of philoſophy does not arrange them in a proper order, whence may iſſue, as it were, ſpontaneouſly, the general principles belonging to each particular branch of reſearch. When theſe principles have been legitimately deduced from the compariſon and examination of all the facts combined, the ſyſtem, or general doctrine, reſulting from them, is no longer a vague hypotheſis; but forms a true picture of the ſcience, at leaſt, in as far as the ſtate of its

progreſs

progreſs will permit it to be traced: and the new diſcoveries, that may be made, will be eaſily referred to the general principles, to which they relate; whether they tend to confirm them, or to contradict them, and to render ſome changes or modifications of them neceſſary.

According to this laſt ſuppoſition, that is, when the new diſcoveries overturn certain concluſions, which all the facts formerly known had cauſed to be regarded as general truths, it may be eaſily perceived, that the claſſification of the ſame facts, and the expreſſion or connection of the principles, which muſt always be directly deduced from them, will demand more or leſs important corrections. Every period, which is diſtinguiſhed by the marked advances of any ſcience, muſt be equally characterized by analogous reforms in the language, and in the elements of that ſcience. The human mind, in order to obtain a ready command, and facility in the application of its acquirements, muſt poſſeſs a common principle that combines them, arranges them, and forms a complete whole of the parts, which in themſelves are inſignificant, as long as they remain ſcattered and undigeſted. Each of theſe epochs will aſcribe to itſelf the excluſive poſſeſſion of the truth; and all of them may have an equal claim to it, if the ſyſtems which they have produced embrace and connect, in a natural manner, all the known facts; for general truths are, and can be only concluſions from all the obſervations, or from all the particular ideas, which have been collected on any given ſubject.

There are, however, diſcoveries, which ſhake the very foundations of a ſcience, and which, in a manner, change its whole appearance. How then is it poſſible that its ſyſtem of arrangement, and its method of inſtruction, ſhould not undergo a ſimilar reform?

But, even, when the new facts which are obſerved, or the new ideas which are acquired, naturally find their place in the arrangements formerly adopted, the gradually increaſing number of thoſe facts and ideas obliges us, from time to time, to reviſe and ſimplify the claſſifications, which compriſe them, and the methods, which have been reſorted to in order to facilitate their ſtudy. In this way, ſcience may be compared to an inquiſitive traveller, who, collecting every thing which intereſts him on his journey, ſees his baggage increaſe in bulk every moment, and feels himſelf frequently obliged to ſtop and examine it, in order to free himſelf from the uſeleſs and redundant articles, or to arrange, in a more ſuitable order, thoſe which he cannot diſpenſe with, that they may occupy leſs room, and that the carriage or the employment of them may become more eaſy and convenient.

If there be a ſcience overcharged, if I may be allowed the expreſſion, with ſuperfluous baggage, it is doubtleſs medicine; and none ſtands more in need of a true philoſophical ſpirit to direct its reform. A rigorous method, which would free it from all uſeleſs and extraneous matter, is required for ſimplifying, by an improved arrangement, the ſyſtem of neceſſary knowledge of which it is compoſed, and for throwing a new light on the true relations which it bears to ſeveral other ſciences. The objects of its attention are ſo numerous; the qualities of mind required for its cultivation are ſo various, and even, in appearance, ſo oppoſite; the practice of the art is ſo full of difficulties; the chief object which it has in view, is one of ſo very high importance; that a complete reform, ſimilar to that which was formerly effected by Hippocrates, is required for promoting its progreſs, the improvement of its plan of inſtruction, and its application to uſeful purpoſes. The intereſts of humanity, as well as thoſe of the ſcience itſelf, plead for it.

At a time when all the branches of ſcience are in ſome meaſure renovated, thoſe phyſicians who are endowed with any portion of philoſophy, ſhould regard it as a duty to unite their efforts, in order to accompliſh this great reform of their ſcience and their art. The enlightened ſtate of the age will allow it to be more complete, and more permanent in its effects, than even Hippocrates could have rendered it in his time. Conſidering the rapid and progreſſive impulſe which has been communicated to all the branches of human knowledge, it would not be ſufficient to execute merely the reforms which are required at the preſent moment; but we ſhould pave the way for thoſe that may become neceſſary afterwards; for all ought to be directed by the ſame ſpirit, if not executed on the ſame plan. Witneſſes of the daily advances which are made in the other departments of natural philoſophy, to which men of genius have applied the true methods of reſearch, phyſicians ſurely would not be excuſable, if they allowed the beautiful and extenſive ſcience which they cultivate, to remain buried under that crude and undigeſted maſs of materials, which obſervers have ſo often collected without diſcernment, and which theoriſts have ſo often employed without judgement or diſcrimination. Surrounded, as they are, by objects ſo various, ſo fugitive, ſo delicate, and in the examination of which the leaſt aberrations of reaſoning or deduction lead to the moſt dangerous errors; they certainly will not be permitted to tolerate a vague and inaccurate language, capable of obſcuring the moſt ſimple truths, and of giving to the mere fictions of the imagination all the appearances of reality.—The time is come for placing medicine on a level with the other ſciences, and for determining, with preciſion, their mutual relations. Situated between phyſics and moral philoſophy, it is of peculiar importance to diſcover, and to point out, with clearneſs and exactneſs, the true relations which it bears to each of theſe ſciences. It muſt borrow the ſtrict and preciſe language of the former, and the liberal, and as it were familiar, tone of the latter. It muſt take advantage of all that the intellectual philoſophy has moſt rigorouſly eſtabliſhed in its theories, and of all the delicate illuſtrations which its daily application to the ſenſitive frame ſuggeſts. In ſhort, after having, by the ſure methods of obſervation, experiment, and reaſoning, reduced its principles to a regular ſyſtem, it will be neceſſary, that the improvements in its plan of inſtruction ſhould form for practice a ſet of minds, at once profound, comprehenſive, firm, and pliant, who join to the light of a ſuperior underſtanding that knowledge of life and manners, and that facility of action, without which all the gifts of nature and of art are almoſt wholly uſeleſs. Happy combination, perhaps even indiſpenſible, for preventing the practice of a ſcience, of which the objects are ſo various and ſo delicate, from becoming a mere ſcourge of humanity!

Influenced by theſe powerful conſiderations, I had ventured to conceive the plan of a new claſſification of the different branches of medical reſearch,

reſearch. I judged it adviſable to adopt a new arrangement of the facts on which it reſts, and of the particular ideas or opinions which their careful examination ſuggeſts; and without preſuming to change its phraſeology or its nomenclature, I hoped to be able, by rigorouſly determining the meaning of the words I employed, to baniſh intirely from its language, that vagueneſs and that obſcurity, which ſo very much disfigure it. This appeared to me a duty ſo much the more indiſpenſible, that theſe defects may miſlead even the moſt enlightened inquirers; and, above all, by furniſhing the ignorant quack with an almoſt inacceſſible aſylum, they become, firſt, the ſource of the moſt fatal errors, and, afterwards, ſanction them by a ſort of myſterious attraction. As I propoſed to conſider the ſcience of medicine, more particularly as it relates to the treatment of diſeaſes, it was to that branch of it which bears the name of *Therapeutics*, that all the others were to have been ſubordinate; it was in relation to it that all their ſubdiviſions were to have been traced, and all their mutual connections determined; and the concluſions, reſulting from this new method of regarding things, were all to have had the common aim of improving the practice of the art.

Different avocations and duties, however, have not allowed me to accompliſh ſo great an undertaking, which, beſides, is, in all probability, above my powers. The following work, which was deſigned for an introduction to it, is the only part of it which has been completed; it is, at leaſt, the only part which I can at preſent venture to offer to our young ſtudents, to whom I ſincerely hope it may not prove wholly uſeleſs.

The direct object, then, of this work is to trace, in a rapid and ſummary manner, the hiſtory of the revolutions of medical ſcience; to diſtinguiſh each revolution by the circumſtances which have occaſioned it, and by the changes which it has effected in the ſtate, or in the progreſs, of the ſcience; and laſtly, to endeavour to diſcover, if theſe different views, when ſubjected to modern philoſophical methods, may not ſuggeſt ſome uſeful hints for the reform of the ſcience, and of its plan of inſtruction.

In order to arrive at all the cauſes of the different changes which medicine has undergone, and to deſcribe them with exactneſs, it would be neceſſary to enter into all the details of its hiſtory; it would be neceſſary to join with it the hiſtory of many other collateral ſciences; it would be neceſſary even to trace in ſome degree that of civilized ſociety. Indeed it is only, perhaps, by viewing theſe different objects together; by examining the reciprocal action of the ſocial ſtate and of political events upon each other, their common influence on the progreſs of the human mind in general, and that of the different ſciences on medicine, in particular, that we can form a preciſe and perfect idea of the ſtate of the latter, in all its ſtages of advancement, down to the preſent time. Nothing, certainly, would be more philoſophical, than its hiſtory executed on ſuch a plan, and with ſuch views: it would reflect a new and clear light upon many parts of the general hiſtory of mankind, with which, at firſt ſight, the ſcience of medicine ſeems to have no connexion. But our object does not preſcribe to us ſo vaſt a plan. It will ſuffice for our purpoſe, to characterize diſtinctly the principal epochs of medical hiſtory; to point out, in each revolution, the real ſtate of public opinion; to appreciate, with accuracy, cauſes and effects; and laſtly, to inquire, what are the proper means of promoting the reform which has been for ſome time preparing, and which, eventually, cannot fail of accompliſhment.

Such, then, is the deſign of the following work.

CHAPTER I.

SECTION I.

Is the Art of Medicine founded on a ſolid baſis?

BEFORE we enter upon our ſubject, ſome preliminary conſiderations are neceſſary.—Many philoſophers of reputation have regarded medicine as a deceitful art, the empire of which was founded ſolely on credulity and weakneſs. The ſecret ſprings of the human frame are, they ſay, too delicate for us to flatter ourſelves, that we ever can preciſely aſcertain the cauſes of their derangement. Nature has placed in her work the means of reſtoring order; and whenever theſe means are inſufficient in themſelves, the pretended reſources of medicine are wholly uſeleſs.

Even ſome very enlightened phyſicians have countenanced this opinion; at leaſt, they limit the power of the art to ſuch a degree, as to regard the ſtudy of it rather as an object of curioſity, than of utility. The knowledge of man, in a ſtate of health and diſeaſe, forms, in their eyes, but a branch of natural hiſtory, intereſting no doubt in itſelf, but ſcarcely applicable to the preſervation of human life.

According to either of theſe ways of conſidering the medical art, it would deſerve but little attention on the part of the government. If it be viewed in the former light, it would only, like other ſorts of impoſture, require the ſuperintendance of a ſtrict and vigilant police; if it be placed in the latter point of view, we ſhould loſe no time in ſubjecting it to the moſt ſcrupulous examination, in order to ſelect the ſmall portion of uſeful knowledge which it contains, and to conſign the reſt to contempt and oblivion.

In another work I have diſcuſſed this queſtion of the certainty of medicine. I have ſtated, at full length, the different arguments upon both ſides, and I flatter myſelf, that I have ſucceeded in removing the doubts and difficulties, which muſt have ſuggeſted themſelves to every reflecting mind. I ſhall, in this place, mention briefly the concluſions which have reſulted from that inquiry.

The ſtudy of nature is, in general, a ſtudy of facts, and not of cauſes. We obſerve merely a ſeries of phenomena and of ſenſible changes, frequently without having the means of diſcovering how theſe phenomena take place, or how theſe changes are effected.—For ſtudying the phenomena, which living bodies exhibit to our view, and for tracing their hiſtory with accuracy, it is not neceſſary that we know the nature of the principle that animates them, or the manner in which it brings their powers into aɛtion. It is ſufficient for our purpoſe, to aſcertain the exiſtence of the phenomena themſelves, to mark the order in which they are produced, as well as the mutual relations which they bear to one another, and to claſs them in ſuch a manner, that both this order and theſe mutual relations may be diſtinɛtly perceived. For ſtudying the healthy and diſeaſed ſtates, for tracing the progreſs and developement of any particular diſeaſe, we have no occaſion to know the eſſence of life, or that of the morbific cauſe. Obſervation, experience, and reaſoning are ſufficient for our purpoſe—We require nothing more.

As, during health, a ſeries of regular aɛtions are performed, for ſupporting, and, in ſome meaſure, for renewing it every moment; ſo, according to the laws of organization, the ſtate of diſeaſe is accompanied by another ſeries of actions, which ſeem deſtined to undermine it; but which, in reality, when they are neither too weak, nor too violent, nor diverted from their proper end, by new diſorders, tend, for the moſt part, to reeſtabliſh the natural health and order of the ſyſtem.

Theſe movements are manifeſted by phenomena peculiar to themſelves, which, to attentive obſervers, charaɛterize them ſufficiently. Such are the ejeɛtion of ſubſtances which diſorder the ſtomach,

mach, frequent alvine diſcharges, copious diureſes, hemorrhages, perſpirations, &c.

Sometimes, the changes which take place in the animal economy are more obſcure and concealed; their external ſigns are leſs evident; and their nature is no longer the ſame. Thus, the averſion to ſome particular ſubſtances, or uncommon appetites for others, tranſient exaltations or depreſſions of different vital functions, certain changes in the ſyſtem ſubjected to a periodical revolution, or returning at undetermined times, are at once the ſigns of internal diſorders in the body, and the inſtruments by which nature effects their cure. It only requires ſome attention to perceive theſe different phenomena, and to diſcover in what caſes theſe ſpontaneous efforts are uſeful or injurious.

From obſervation alſo we learn, what general combination of ſymptoms diſtinguiſhes the diſeaſes, in which it is prejudicial to the patient, or favourable to his cure, to follow the ſuggeſtions of inſtinct, and to direct our operations accordingly.

But certain ſubſtances applied to living bodies occaſion the ſame actions, and produce the ſame phenomena. Taken internally, ſome purge or provoke vomiting; others promote perſpiration, or occaſion an increaſed flow of urine, or excite or diminiſh the vital actions; while others, again, moderate exceſſive pain, and induce ſleep, the return of which is ſo neceſſary for the preſervation of health; or, by a ſpecific power, they ſuſpend or ſuppreſs entirely certain actions in the ſyſtem. Finally, there are ſome, which, acting in a more tardy manner, alter the ſtate of the fluids, and the nature and properties of the ſolids.

Sometimes, by ſtimulating the extremities, we may excite a direct and general action in the whole ſyſtem, ſufficient to change entirely its condition: at other times, theſe powerful local impreſſions connect the diſordered movements, give a new direction to them, or even eſtabliſh others of a totally different nature. Again, they may ſometimes produce various evacuations of the fluids, the effects of which will be determined by the character of the diſeaſe, and by the circumſtances in which theſe new actions originate.

Laſtly, the preſence of the external air is, in general, neceſſary for the ſupport of life: its preſence is even indiſpenſible to the exiſtence of man, from the very moment of his birth. Now, this fluid is found in various ſtates, and conſequently produces on our bodies very different effects. Food and drink are equally neceſſary, both for exciting and ſupporting the action of the animal machine, and for repairing its daily loſſes. Now, the operation of theſe ſubſtances, when introduced into the digeſtive organs, into the circulation of the fluids, and penetrating into the minute contexture of the fibres, neceſſarily becomes the cauſe of numerous changes, which extend their influence over the whole living ſyſtem.

We may further obſerve, that the atmoſpherical air is different, in different parts of the globe. The nature of the ſoil, its cultivation, and the manner in which it receives the ſolar light, the vicinity of running or ſtagnant waters, of woods or mountains, may intirely alter the properties of the atmoſphere. Of theſe properties, ſome are ſenſible, and in ſome meaſure external, as cold and heat, dryneſs and humidity. Others, again, are manifeſted only by their effects.

The ſkilful obſerver may, even on theſe points, aſcertain, by ſure methods, the nature of all the objects of his reſearches. He may eſtimate, with preciſion, the effects of different remedies, and trace to himſelf rules, which will reduce the probability of their ſucceſs to a high degree of certainty; by claſſing methodically both the caſes in which they have been given, with all their minute diſtinctions, and the remedies themſelves, according to their different combinations. He may determine the action of the atmoſpherical air in different ſituations, and eſtimate the influence of different ſorts of food, according to their nature and apparent qualities. In ſhort, all the effects of regimen, in the moſt extenſive ſenſe of the word, may be directly appreciated; for the ſtates of ſleeping and waking, an active or ſedentary life, fatigue of body or mind, the mode of clothing and lodging, the affections of the imagination, and the various emotions of the mind, may all be ſaid to contribute to the preſervation of health, or to become the cauſe of new diſorders in the living ſyſtem.

To conclude, the ancient phyſicians have left us extenſive catalogues of diſeaſes, which have been enlarged by their ſucceſſors; and unfortunately, in theſe latter ages, ſeveral new diſorders have invaded mankind. Amidſt all the phyſical maladies, which the developement (too often miſunderſtood) of our moral nature may ſtill continue to augment and to aggravate, there are many, which, when left to the precarious ſuccours of nature, prove almoſt always fatal; but which art has frequently found means to cure.

This general obſervation is proved by the method of treatment, which has been invented for the cure of dropſies ariſing from inveterate obſtructions, for the cure of ſcurvy, of the venereal diſeaſe, and, in particular, of malignant intermittent fevers. It would be eaſy to confirm this aſſertion by the hiſtory of ſome particular, but leſs important, methods of cure of different acute or chronic diſeaſes; but I purpoſely avoid all minute detail, and ſhall therefore conclude my remarks on this ſubject.

We ſee, then, that medicine, like other arts, is really founded on obſervation and induction. Having the alleviation of one of our chief wants in view, it is, even at the preſent moment, of the moſt direct and extenſive utility, and may every day become more and more ſo. And if, in all ages of the world, we have ſeen this utility called in queſtion by men of ſenſe and diſcernment, we muſt aſcribe it ſolely to the errors of its language, the vagueneſs of its theories, and the unphiloſophical character of the great majority of its books and plans of inſtruction. Surely, then, the art of medicine merits the moſt ſerious attention on the part of a philanthropical legiſlature; and its place, in every plan of national education, ſhould be worthy of the importance of its object.

We may, indeed, be told, that, if the art exiſts in nature, or if nature has placed within our reach the objects to which it is directed, and we have really received from her the means of ſtudying and explaining them, the mere difficulty of its application is ſufficient to render it nugatory, or dangerous, in practice. To this opinion I can by no means aſſent. But, even, if the aſſertion were well founded, it ſhould ſerve as an additional motive, to incite us to improve the methods of obſervation and experiment which are applicable to medical reſearch, to promote the reform of its plan of inſtruction, and to watch, with care, over all its labours.

SECTION II.

Different points of view, in which the Art of Medicine may be conſidered.

In order, however, to form a juſt idea of the art of medicine, it is not ſufficient to view it ſimply with reference to the individuals whoſe health it may preſerve, or to the complaints which it may cure or alleviate. This general reſult of its application forms, no doubt, its principal object; but may it not, with juſtice, be ſaid to poſſeſs the moſt beneficent attribute of nature—that of reſtoring to life the feeble mortal who is rapidly ſinking into his grave; and to preſent a living picture of thoſe ſuperior beings, whom the imagination figures to itſelf as bearing upon earth the propitious commands of the Divinity? A family in tears, or an aſſemblage of friends, ſeized with the moſt heart-rending anguiſh, call upon you to give them back the object of their attachment. You fulfil their wiſhes, and you become, in their eyes, a friendly deity! And when you reſtore the happineſs of two beings, who live in each other's affections, but who are on the point of ſeparating for ever, you not only rekindle the flame of life in the one whom your cares revive, but you beſtow, as it were, a double bleſſing. In ſhort, you ſeem, in ſome meaſure, to do more than the power which called us from nothing into life.—To preſerve to our country its moſt uſeful citizens, to prolong the ſervices of genius and the example of virtue, are ſurely the moſt noble and moſt praiſeworthy actions, that can deck the annals of the human race.

There are, I repeat, ſeveral other reſpects, in which medicine may prove of eſſential importance and utility to ſociety, either by the direct influence which it exerts on a variety of objects of daily uſe, or by the information and aſſiſtance which it affords in the other branches of ſcience.

1. The ſtudy of the animal economy forms an important branch of natural hiſtory, or, rather, of general phyſics; and the animal economy itſelf cannot be well underſtood, but by the moſt accurate obſervation of the healthy and diſeaſed ſtates of the ſyſtem, and by the moſt attentive examination, both of the phenomena, which reſult ſpontaneouſly from the action of the living powers, and of the phenomena, which are produced by the agency of external objects, or by the exhibition of certain ſubſtances internally.

In the ſtudy of nature, we can neither ſeparate thoſe objects which are united by fixed relations, nor divide thoſe which form a ſimple whole. Now, phyſical ſcience embraces the conſideration of the animal ſyſtem, which, from the ſimple reaſon that t intereſts us ſo immediately, holds the firſt place n it; and the bare deſcription of this ſyſ-

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tem, if we confined our views to a delineation of it in its healthy ſtate, would neceſſarily require an intimate acquaintance with diſeaſes; becauſe theſe latter give birth to many phenomena which it would be very difficult to appreciate without ſuch aſſiſtance, and diſcloſe ſeveral ſprings of action, or properties of the body, which are obſcured and concealed in the uniformity of a more regular and ſettled ſtate.

2. The general ſcience of human nature is divided into two principal branches: into its phyſical, and into its moral hiſtory. From their ſyſtematic union, and from the indication of the numerous points in which they are related and connected with each other, reſults what may be called the *Science of Man*, or the *Anthropology* of the Germans. In fact, whether the object of medicine be to determine the rules of regimen, and from the obſervation of diſeaſes, to deduce a ſeries of principles applicable to their treatment; whether the moraliſt ſtrive to promote the happineſs of private life, by tracing particular maxims of conduct, or the legiſlator endeavour to increaſe the proſperity of the ſtate committed to his charge; whether, in fine, the artiſt and philoſopher be deſirous to direct our views to new objects of importance, and to prepare for us new ſources of enjoyment;—it is always, with the portrait of man in their hands, if we may ſay ſo, that they

ought to proceed: and as his phyſical deſcription forms the ground-work of the deſign, the ſcience of medicine, which illuſtrates and completes the repreſentation, is more or leſs intimately connected with all the other parts, and, in particular, ſerves to throw the neceſſary light on the baſis of all the moral ſciences.

3. Man, from the nature of his organization, is endowed with a principle of progreſſive improvement, to which it is impoſſible to aſſign any bounds*. If we trace his advancement from the ſtate of weakneſs and helpleſſneſs in which he is placed by nature upon this globe, to the acquirement of the firſt and even of the moſt imperfect aſſociation, what an immenſe interval does there not appear to exiſt! How many fruitleſs attempts, how many repeated efforts muſt he not have made to overcome it!

From that ſtate of ſocial infancy, or, to uſe more determinate and leſs arbitrary terms, from thoſe ſavage communities which the remote annals of the world and ſeveral modern voyages deſcribe to us, to the point at which the civilized nations of Europe are now arrived, the progreſs does not

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[*] This principle of progreſſive improvement has, no doubt, its limits, like all the other powers of nature; but theſe limits cannot be fixed, and, we have every reaſon to think, will always remain undetermined.

ſeem more aſtoniſhing. Certain phyſical or political cataſtrophes have, it muſt be confeſſed, appeared to produce a retrograde march of the human mind. The Greeks and Romans, who accompliſhed ſuch feats under the influence of liberty, have ſunk into ſlavery, under the yoke of deſpotiſm and ſuperſtition. But one conſolatory truth reſults from a judicious peruſal of hiſtory,—that human affairs conſtantly tend to amelioration; that this progreſs is never inverted, nor even ſuſpended, without the intervention of accidental cauſes that have power ſufficient to derange this natural tendency; and that, as ſoon as theſe cauſes ceaſe to operate, the progreſs towards perfection is reſumed with increaſed energy and activity.

All that the labours of paſt ages have hitherto effected, is doubtleſs nothing in compariſon of what remains for us to accompliſh, and of what we ſhall leave to be done by ſucceeding generations. But a vaſt career of improvement has been lately opened before us, and we muſt render to poſterity a faithful account of the uſe we make of the preſent opportunities, the moſt fortunate, perhaps, which mankind ever enjoyed.

Man is ſuſceptible of improvement in two modes. His phyſical education and regimen, in the moſt enlarged ſenſe of theſe words, ſerve to develope the action of his different organs, rouſe his dormant faculties, and, in ſome meaſure, create new ſenſitive powers. And when theſe means have been employed for ſeveral ſucceſſive generations, it is no longer, *cæteris paribus*, the ſame men, or the ſame race of men that exiſt.

The moral education of man has for its object, to develope his underſtanding, to cultivate his affections, and to direct all his natural appetites, in the way that tends moſt effectually to promote his own happineſs, and that of his fellow creatures. Every one is acquainted with the difference which it may create between one man and another, whoſe original diſpoſitions were the ſame. When ſupported by all the influence of the legiſlature, it gives birth to thoſe grand political phenomena, which the page of hiſtory holds up to our admiration, and which have occurred, in former ages, at intervals unfortunately too diſtant and too tranſient to produce much real and permanent good. Perfected itſelf, by the duration of its effects, and perpetuated with all its ſucceſſive improvements, by a ſort of tranſmiſſion from father to ſon, the term of its advancement cannot be aſcertained with preciſion ; but is, in all probability, much more remote than is generally imagined.

It is by the combination of theſe two powerful principles, that human nature is rendered ſuſceptible of a high degree of improvement. When ſkilfully united, they aid and aſſiſt each other. The cauſes which improve the phyſical conſtitution of man, furniſh, in ſome meaſure, the groundwork, or inſtruments of his education; the circumſtances which improve his moral nature, put theſe inſtruments into action, endow them with energy, and turn, into proper channels, the faculties which are moſt liable to receive a vicious direction.

The former of theſe cauſes is entirely within the ſphere of medicine. We have already ſeen the direct, but very numerous relations which it bears to the latter.

The art of medicine, therefore, may exert a great and material influence on the progreſſive improvement of the human race.

4. Health is, no doubt, the natural ſtate of man. But diſeaſe exiſts alſo in nature, ſince it reſults from the laws of nature, and, even in a great meaſure, from thoſe which are eſtabliſhed for the preſervation of health. The exquiſite ſenſibility of the organs of the human body; the prediſpoſition to diſeaſe, which their growth at different periods occaſions; the action of external cauſes, which we have it ſo ſeldom in our power to regulate; the inevitable accidents which happen in the ordinary courſe of life; and laſtly, the indiſcretions, of which even the wiſeſt perſons are ſometimes guilty, all conſpire to render man weak, ſickly, and diſeaſed, juſt as naturally, as he is healthy, cheerful, and vigorous.

But, when man ſuffers from diſeaſe, a warning voice, which no ſubtilty of reaſoning can ſuppreſs, leads him to ſeek for relief. He aſcribes his complaint to certain cauſes: he ſeeks a remedy for it, in the application of certain ſubſtances, or of certain impreſſions, which he regards as cauſes capable of acting in a different manner, and of producing different or oppoſite effects. Thus, he lays hold of the firſt link of a chain of obſervations, and it is thus he becomes phyſician and ſurgeon.

The ſtate of debility, which reſults from diſeaſe, extends itſelf to the intellectual organs, in the ſame way as to the other animal functions. Diſeaſe depreſſes the powers of the underſtanding, as well as the vigour of the muſcular ſyſtem, and may deprave the judgment, as well as the digeſtion. A ſick perſon becomes, in particular, extremely credulous about the object of his hopes and fears. Whoever promiſes him health may eaſily obtain his confidence, and he ſoon becomes the dupe of quacks and ignorant pretenders. Would it not be much more for his intereſt, if he were placed in the hands of a ſkilful phyſician?

With regard to all ſubjects, on which every man is competent to judge for himſelf, and which, from their very nature, render error unpardonable, or, at leaſt, not very dangerous to the perſons deceived, the legiſlature ſhould grant a perfect liberty of thinking and of acting. It is even its duty to encourage all ſorts of induſtry, and to allow full ſcope for all friendly offices. Mutual intereſt, whether real or imaginary, ſhould be the ſole regulator of ſociety, for it is the only juſt one.

But when the ſubjects are of ſuch a nature, that they cannot be maturely appreciated by individuals, and, at the ſame time, when errors of judgment may be productive of dangerous conſequences to the latter; when daily and urgent want compels them to make a choice, and to make that choice often on the impulſe of the moment; and when craft and impoſture are equally encouraged to ſpread their ſnares, both by the proſpect of ſucceſs, and by the facility of obtaining it;—the legiſlature ought no longer to remain an indifferent ſpectator: but it becomes its duty to watch the deſigns of thoſe who may be inclined to impoſe upon the credulity of others; it is bound to provide for the latter thoſe general ſecurities which preſerve it, as far as poſſible, from deception; and it is even bound, in certain circumſtances, to furniſh it with particular advice and aſſiſtance. But there is no ſort of traffic which opens a more ample field for quackery, than the practice of the different branches of medicine. There is no motive, which ſo powerfully diſpoſes the mind to the groſſeſt and moſt abſurd credulity, as the deſire of preſerving, and, above all, the deſire of recovering health.

Will the legiſlature, then, leave the people without any ſafeguard, to fall a prey to their own weakneſs, and to the arrogance of quacks?

This conſideration alone would render the eſtabliſhment of medical ſeminaries indiſputably requiſite. Since man, in a ſtate of diſeaſe, will always have recourſe to medicines, it is ſurely more fit that theſe medicines ſhould be adminiſtered by ſkilful hands; and ſince there will always be phyſicians, thoſe who have been trained by ſkilful maſters, are ſurely preferable to thoſe whom chance has formed. To conclude; is it not the duty of every wiſe and benevolent government, to ſuppreſs and deſtroy that ſwarm of pernicious impoſtors, who ravage our cities and our plains, and who devour the bread of the artiſan and peaſant?

5. There are many kinds of victuals and articles of luxury, of which the quality ſhould be legally atteſted, and the ſale ſuperintended by the police. Several ſubſtances, very dangerous in themſelves, are accommodated to our uſe by proceſſes of art. The moſt uſeful remedies may be eaſily deteriorated or adulterated, and, even in their moſt pure ſtate, they ſhould not always be permitted to be ſold without certain precautions. It is clear, that, in all theſe caſes, the light which medicine is capable of affording, can alone direct the meaſures of government.

Great epidemical diſorders have often been occaſioned by changes in the common diet of the people. Animal food, for example, when corrupted by various accidental cauſes, or obtained from ſubjects, which have themſelves died of certain diſorders; fiſh, when either caught at particular ſeaſons, when they are unwholeſome, or ſpoiled, by an incipient ſtate of putreſcence, or in conſequence of the methods that have been employed for preſerving them; laſtly, corn and flour, when injured by diſeaſes of the plant, by want of proper care in the preparation, or by improper mixtures, have all frequently given birth to the moſt fatal contagious diſtempers.

Beſides, the ſocial ſtate neceſſarily gives riſe and occaſion to ſeveral employments, which can only be executed under the inſpection of perſons converſant with the animal economy.—The purification *(aſſainiſſement)* of great cities and harbours; the conſtruction and ſuperintendance of places of public reſort, in which a number of perſons are crowded together; the draining of lakes, and marſhes; the direction of canals, and the eſtabliſhment of aqueducts and common ſewers, do not, perhaps, leſs require the aſſiſtance of enlightened phyſicians, than of able architects and engineers. It is poſſible, ſometimes, to ſtop the progreſs of a contagious diſeaſe, either by ordering the people to adopt certain precautions, or by cutting off all communication with the infected place, by means of an armed force, or by oppoſing natural obſtacles to the progreſs of the elements that are charged with the contagious principle.

It is well known, that an enlightened police affords the moſt powerful and effectual aſſiſtance in the time of the plague. Acron, in Sicily, and Hippocrates, in the Peloponneſus, are ſaid to have ſtopped thoſe with which Agrigentum and Athens were threatened*, by blocking up certain paſſages in the mountains, through which the peſtilential effluvia were wafted by the winds, upon both thoſe cities†.

6. Among the circumſtances on which the public welfare depends, the preſervation of uſeful animals, and the improvement of their breed, will always appear of eſſential importance to a

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* The plague, as it exiſts at preſent, in the Levant, and as it has formerly prevailed at Marſeilles, Toulon, London, Moſcow, &c. is never propagated but by immediate communication with, or at leaſt by cloſe vicinity to the ſphere of infection. But the ancients comprehended, under the name of the plague, all thoſe epidemic diſorders in which the fever is accompanied with affections of the glands and carbuncles. Many of theſe epidemics are, in fact, cauſed by the ſtate of the atmoſphere, or by the miaſmata which it tranſports from a diſtance.

† See Note [A].

wiſe adminiſtration. The ox, the horſe, the aſs, and the mule, all ſhare in our toils, and ſupplant or economize our manual labour. Their ſtrength being ſo much more conſiderable and productive, the more vigorous and healthy that they are, augments, in a relative proportion, the produce of their labour, and diminiſhes the expence of their employment. From the ſkins of many ſpecies of animals man forms his moſt uſeful and convenient clothing, or he faſhions them a thouſand ways, to ornament his dwelling or his houſehold furniture: and the fleſh of ſome kinds furniſhes him with a principal part of his food.

Notwithſtanding the opinion of ſome philoſophers, there can be no doubt, that animal food is very ſuitable to the human conſtitution; but it is certainly leſs proper, when the animals which afford it are weak and poor, and it becomes unwholeſome or dangerous, when they are unhealthy or diſeaſed.

To conclude; many ſpecies of animals render us particular ſervices, and theſe ſurely may claim our attention to the means of improving them, of preſerving them in a ſtate of vigour and health, and of rearing them, according to thoſe views and methods which render them more fit to ſupply our wants.

This branch of rural economy is wholly ſubordinate to the veterinary art. Now, the veterinary art itſelf is only a branch of medicine; and the numerous points in which it touches upon the treatment of the human body, will become more diſtinct and ſtriking, in proportion as our knowledge of both is extended.

Such is the view that preſents itſelf to the obſerver, when he regards this ſubject with a little attention; ſuch are the different points which it appears to me neceſſary to conſider, if we be deſirous to form a ſound judgment on the ſubject, to inveſtigate it thoroughly, and, eſpecially, to deduce from the inveſtigation, uſeful, and generally applicable truths.

It is ſufficiently evident, that ſcience is not a tree, from which we may lop off, at random, the branches that are deemed ſuperfluous. For if nothing be ſuperfluous, but what is pernicious or abſurd, every thing which is not unfavourable to its progreſs, that is, every thing which can neither encumber nor obſcure it, muſt appertain, and be ſerviceable to it. According to the nature of things, the whole ſyſtem of truths forms a chain, the links of which are indiſſolubly bound together. In the preſent ſtate of our knowledge, we can lay hold of and follow only inſulated parts of this chain; but, in proportion as we advance, the deficiencies are ſupplied, and the points of union, or the relations of the ſeveral parts among themſelves, and of each ſeparate part to the whole, are daily augmented. Every thing leads us to believe, that, if we were able to reduce to order, and to compriſe all the branches of human knowledge in their real elements, we ſhould no longer diſcover any breaks or diviſions among them. They would form, if we may ſay ſo, but one organized body, the different members of which would be mutually adapted, and the different actions of which would afford reciprocal aſſiſtance to each other. Finally, by this ſyſtematic and perfect arrangement, as all the particular truths would reſolve themſelves into a ſmall number of general principles, which form, as it were, a baſis or common ſupport for the former; the mind would be able to follow eaſily their different connections, and their numerous ſubdiviſions, and the power of ſeizing them in their combinations would no longer conſtitute the excluſive attribute of genius.

The great importance of medical ſcience, the benefits which ſociety may expect from it, the advantages which the other ſciences may derive from its application, and, laſtly, the neceſſity of perfecting its principles and its plan of inſtruction,

tion, are ſo clearly evinced from the preceding obſervations, that it is unneceſſary, in this place, to enlarge in their illuſtration. We ſhall therefore proceed to the immediate object of our undertaking, and begin by taking a ſurvey of the ſtate of medicine, and of medical education, during the moſt remarkable periods of hiſtory.

CHAPTER II.

View of the Revolutions of Medical Science, from its Origin to the preſent Time.

SECTION I.

Cultivation of Medicine by the Chiefs of ſavage Tribes, by the Poets, and principally by the Prieſts.

THE obſcurity, which invelopes the infancy of the medical art, extends to the origin of all the branches of human knowledge. We know only, that, from the earlieſt periods of hiſtory, it was practiſed with a certain degree of ſucceſs; from which we may infer, that at the dawn of the arts, it had obtained a place among them. The reſearches which we might be inclined to make, with regard to the manner in which it was at that time taught, would be wholly uſeleſs. Materials are wanting for ſuch an inquiry, and the friends of truth ſhould not loſe their time in forming vain conjectures, however learned they may happen to be. At all events, it is not in a work like the preſent, that the elaborate, and too often fallacious inquiries of erudition would be favourably received by the reader.

To reaſon from the general courſe of nature, it is evident, that man, ſubjected, as he is, to the influence of a variety of cauſes which may diſorder the action of his organs, muſt very ſoon have been obliged to ſeek for the means of alleviating the pains, and of curing the diſeaſes, with which he was affected. As he cannot ſeclude himſelf entirely from the conſtant agency of many of theſe external cauſes, as he carries within him ſeveral others, which are deſtined to act at particular periods of life, or which may, at any time, exert their influence; we may with ſafety affirm, that the firſt trials of particular remedies bear almoſt as ancient a date as the exiſtence of man himſelf. Among the moſt rude and uncultivated tribes, as thoſe of New Holland, and New Zealand, thoſe of Lapland and Greenland, of North America, and the interior of Africa, we find traces of the practice of medicine and ſurgery. The ſavages in theſe countries know how to diſtinguiſh different diſeaſes, and to apply a more or leſs ſuitable method of treatment; and they are acquainted with the uſe of ſeveral remedies, which form no part of their daily food. Theſe uncivilized communities preſent to us the picture of mankind in their infancy, and give us a lively idea of the original ſtate of all nations.

From their firſt exiſtence, men muſt have had diſeaſes, which they naturally ſought to cure or alleviate. To attain theſe objects, they tried a variety of methods. But we may preſume, that their diſcoveries were, in general, very ſlow, and more frequently the offspring of fortunate accidents, than the reſult of rational inveſtigation. Men, receiving by tradition a knowledge of the diſcoveries which had been already made, would ſoon find themſelves obliged to make new obſervations for themſelves; and in this manner their acquiſitions would gradually increaſe. In theſe early ages, all the knowledge of the tribe formed a common ſtock; and their imperfect arts might be exerciſed by all thoſe who were endowed with a certain portion of intelligence. Medicine, therefore, exiſted before there were any regular phyſicians.

Theſe men, in the firſt ſtages of civilization, having their ideas neceſſarily confined within a very narrow ſphere, and directed merely to the ſatisfaction of their moſt urgent wants, for all of which they are neceſſarily obliged to provide, are, no doubt, incapable of advancing the arts and ſciences from their firſt rude ſtate. However, we muſt not believe, that they are always deficient in judgment and penetration. Their ſenſes, which are kept in a ſtate of conſtant exerciſe, are, in general, more acute than thoſe of men who live in a more improved ſtate of ſociety; and their mind, which derives every thing, in ſome meaſure, from itſelf, is the more juſt in its conceptions, that it is formed by a ſeries of impreſſions, more ſtriking and permanent, in proportion as the objects which produced them have been leſs numerous and various. The good ſenſe and dexterity of ſavages are well known. It is therefore probable, that certain general views of medical ſcience, and the employment of many important remedies, are to be referred to the earlieſt periods of ſociety, at leaſt, in thoſe climates which favour the developement of the intellectual faculties. Certain it is, that, among the Greeks, this ſpecies of knowledge may be traced to the higheſt antiquity.

Medicine, we find then, was firſt cultivated by the patients themſelves, or by their friends and relations. Each family had its traditions and particular modes of practice; and each tribe profited by the experience that had been collected by its own members.

Men of power and affluence, who were deſirous to add dignity to wealth, and to become uſeful to their fellow-citizens, cultivated the riſing arts with conſiderable ardour, and were far from neglecting medicine, which afforded them the means of frequently rendering very neceſſary aſſiſtance. Chiron, Ariſtæus, Theſeus, Telamon, Teucer, Patrocles, Autolicus, Ulyſſes, and ſome other heroes, whoſe names are commemorated by the poets of antiquity, were no leſs honoured, in Greece, for their medical knowledge, than for thoſe illuſtrious exploits, which, whether real or fictitious, have conferred a durable celebrity upon their names.

The poets were the firſt philoſophers among all nations, and ſoftened, by their ſongs, the manners of the ſavage tribes. In order, however, to produce a more lively impreſſion upon their rude imaginations, and in hopes of giving to the leſſons of morality the ſupport of a more active and vigilant power, than that of the laws, they taught the worſhip of the deity. It was they, too, who gave to the different languages their firſt and moſt requiſite poliſh: and, by theſe means, they ſucceeded in early preparing all thoſe additional advantages which are likely to accrue to the ſocial ſtate, from the more confirmed progreſs of the human mind.

Not leſs deſirous of glory, than the heroes which they celebrate, the poets likewiſe applied themſelves to the ſtudy of medicine; ſometimes, to promote their fame by its practice; at other times, to deliver, in their works, whatever was moſt curious and intereſting in its precepts. In theſe early ages, when the art of writing was but little diffuſed, or, perhaps, entirely unknown, the exact meaſures and melodious rhythm of poetry were extremely uſeful, for impreſſing on the memory the truths that are applicable to our daily wants. Linus, Orpheus, Muſæus, and ſeveral others, have ſung to us of the beneficent art which prolongs life, allays pain, and, along with health, reſtores happineſs and pleaſure. Heſiod compoſed whole poems on the properties of plants. In the poem intitled *Works and Days*, he lays down ſeveral medical and dietetic rules. Homer frequently ſpeaks of the wounds of his heroes, as a man to whom the ſtructure of the human body was not entirely unknown; and though it would be very eaſy, notwithſtanding the extravagant pretenſions of his enthuſiaſtic admirers, to point out ſome groſs anatomical errors in his works, it cannot be denied, that we meet with many acute phyſiological remarks, ſome curious paſſages about the manner of dreſſing wounds in his time, and ſeveral remarkable particulars reſpecting the action of remedies. What he ſays of the power of the *nepenthè*, leads us to believe, that the properties and uſe of narcotics were known to the ancients. With regard to the uſe which one of his heroes makes of the *moly*, in order to preſerve himſelf from the ſorceries of Circe, he, no doubt, followed the ſuperſtitious creed of the time. The application of wine to wounds, and the practice of inciſion and ſcarification were employed in the camp of the Greeks before Troy; all which, however, does not prove, as ſome ſcholars would make us believe, that Homer was deeply ſkilled in ſurgery, although we are intitled to infer, with perfect confidence, that the invention of theſe remedies bears a date, prior to the age in which he lived.

Certain commentators admire very much the propriety of the advice, which the *ſilver-footed* Thetis gives to her ſon Achilles, when ſhe recommends love to him as a cure for the melancholy with which he was affected. It requires no great ſkill in phyſic to know, that the pleaſures of love may really diſſipate melancholy; but it is equally certain, that they may alſo ſometimes occaſion it.

Pliny ſeems ſurpriſed, that Homer has not ſpoken of warm baths, and concludes, from his ſilence, that this kind of remedy was not uſed in his time. Philoſtratus maintains the contrary opinion. According to him, the hot baths pointed out by the oracle to the Greeks, for the cure of their wounded, were thoſe of Ionia, ſituated at forty *ſtadia* from the town of Smyrna, and called the *Baths of Agamemnon.*

The plague prevailed in the camp, and was ſaid to have been cauſed by the darts of Apollo; that is, by the action of a burning ſun on the marſhes and ſlimy ſhore of Troas. Homer ſays, that it laſted nine whole days, and terminated before the tenth was entirely ended. Upon the ground of this remark, it has been aſſerted, with more appearance of learning than reaſon, that he was acquainted with the powers of irregular numbers and critical days. But the doctrines of numbers and critical days* were not broached, at leaſt in Greece, till long after his time.

The prieſts ſoon ſeized upon the province of medicine, and found it no difficult matter to combine it with their other inſtruments of power. Indeed, the medical and ſacerdotal profeſſions have, in reality, many features of reſemblance. Both bring into action the ſame principles, hope and fear; and, although the objects of theſe two paſſions are not the ſame, in the hands of the prieſt, as in thoſe of the phyſician, their effects had, at that time, nearly the ſame degree of influence, in promoting the views of both. Certain it is, that medicine, like ſuperſtition, exerts on the minds of men an influence proportional to their weakneſs; and, as the former acts upon more real and palpable objects than the latter, it is found, that the moſt rational and enlightened men can never entirely reſiſt its power. In ſhort, no art penetrates further into the human heart; no profeſſion enables its votaries more eaſily to obtain poſſeſſion of the moſt important family ſecrets; no ſpecies of doctrine (except that indeed which relates to the agency of inviſible powers) affects ſo nearly all thoſe fanciful ideas, in which the human mind, when it throws off the reſtraint of reality, is ſo apt to indulge; and certainly none furniſhes means more independent of all political revolutions, to thoſe who impoſe upon the credulity of the public, and cultivate it, like a fruitful ſoil, with the utmoſt care and attention. It was, therefore, natural, that the prieſts ſhould become phyſicians, as they afterwards, in fact, became *.

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* They appear to have been known in Egypt, and in India; and it is probably from thence, that they were introduced by Pythagoras, their original founder among the Greeks.

From this time forward, medicine and religion formed but one ſyſtem. In order to eſtabliſh the worſhip of their gods, the prieſts proclaimed a number of miraculous cures, which were effected in their name; and in order to render their art more reſpected, they affirmed it to depend on their habitual intercourſe with the deity.—They preached and practiſed phyſic at the ſame time.

According to Strabo, the gymnoſophiſts pretended to poſſeſs a number of valuable remedies: they boaſted of the knowledge of ſpecifics for procuring a great number of children, and for getting ſons or daughters, at pleaſure.

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* In moſt ſavage tribes, medicine is practiſed by the prieſts, or by mountebanks.

The age in which they lived was certainly more proper for the eſtabliſhment of ſuch ridiculous fancies, than the nineteenth century. The druids, in the midſt of their retired foreſts, employed the miſteltoe as an antidote to poiſons and to ſterility, and the ſelago, a plant analogous in its properties to the ſabine, as a ſort of univerſal medicine. Health, of which they pretended to be the diſpoſers, was paid for in advance, by rich offerings, and often, even by the blood of human victims, whom thoſe afflicted with diſeaſe conducted, or cauſed to be dragged to the altars.

The jewiſh prieſts appear to have been originally the only phyſicians of their nation. It was to the Levites, that the people addreſſed themſelves for the cure of leproſy, and it was they who decided on the fate of the families and individuals, who were attacked with this diſorder. In the porch of the temple of Jeruſalem, a complete formulary of remedies was exhibited, of which Solomon was ſaid to be the author. The Eſſenes, a ſect celebrated for the pure and mild ſyſtem of morality, which they endeavoured to propagate among an ignorant and fanatical people, cultivated the ſcience of medicine, not only in order to render themſelves more reſpected, but alſo in order to diſcover means to improve the minds of their adherents, by rendering their bodies more healthy. Zealous apoſtles of their doctrine, they endeavoured to confirm it by the performance of cures: and by theſe means they were often enabled to brave the jealous fury of the Phariſees, thoſe hypocritical and domineering prieſts.—They went ſometimes by the name of *Eſſenes*, and ſometimes by the appellation of θεραπευταί, which ſignifies *healers* or *phyſicians*.

But it is in Egypt, that the prieſts carried their political ſyſtem to the higheſt degree of perfection. It is there, that they preſent to the eyes of the obſerver a ſpectacle capable of exciting both admiration and terror. Riches, power, knowledge, impoſture, were all rendered ſubſervient in forwarding their monſtrous inſtitutions, and in completing the degradation of the people. Poſſeſſed of one third of the landed property of the country, they enjoyed a number of privileges and immunities. Their functions were hereditary, and their confederacy more compact than that of any clergy in the world. This formidable ariſtocracy exerted a violent and uniform degree of oppreſſion on all claſſes of the people. It was by one of their body, that thoſe dark and terrible words, handed down to us in the fifth chapter of Exodus, were uttered, which deſcribe with ſo much ingenuouſneſs, the ſentiments and views with which all oppreſſors are animated:—for the Pharaohs belonged to the ſacerdotal order, and were themſelves prieſts;

and the ſacred fillets, that were interwoven in their crown, preſented a faithful picture of their hypocritical reign, which, by its ſuperſtitious influence, exerted ſo powerful a ſway over the ignorant people, and, by the aid of popular prejudices and the terrors of an unlimited deſpotiſm, kept in equal ſubjection the minds of the more enlightened claſs.

Nor was this all. To theſe different inſtruments of power and authority over the public opinion, the Egyptian prieſts joined all the knowledge of their age and country. We ſhall not ſtop to inquire, whether their knowledge was in reality very extenſive, but there was none elſe in exiſtence at the time; and nothing was more eaſy for them, than to cruſh every diſcovery, which was not made within the walls of their temples, or which they could not conveniently turn to their profit. Medicine, aſtronomy, and natural and moral philoſophy, were all taught by them alone. They gave to every thing the colour which beſt ſuited their intereſts. The myſterious ceremonies of initiation ſerved to imprint on the minds of the novices ſtill more profound ſentiments of fear and reſpect; and the reſerved deportment, as well as the ambiguous doctrines of thoſe Greeks who boaſted of having received their inſtructions from them, are ſufficient proofs, that, in order to obtain ſome knowledge of their dogmas, it was neceſſary to come under an engagement of ſecrecy, or to promiſe to communicate them only to adepts bound by a ſimilar oath. From theſe circumſtances it is eaſy to judge, how degrading and oppreſſive muſt have been the ſlavery and miſery of ancient Egypt, which has been regarded as the nurſery of ſcience, and as one of the firſt ſchools of the human mind.

In order to place this truth in a more ſtriking point of view, we may further remark, that knowledge, which, when freely diffuſed through a whole nation, is the ſureſt ſafeguard of the morals, of the liberty of the ſtate, and of public and private welfare, becomes only an additional inſtrument of tyranny, and a new cauſe of degradation and miſery, when it is confined, by eſtabliſhed inſtitutions, to a particular claſs of ſociety.

The cuſtom which the Egyptians had of embalming the bodies of their dead, might be ſuppoſed to have led their prieſts to ſome diſcoveries in anatomy; but it is eaſy to perceive, that theſe muſt have been very limited, if we conſider the manner in which this operation was performed.

Their cotemporaries and neighbours have praiſed them for their profound ſkill in dietetics. The equable ſtate of health and the longevity of the Egyptians were a matter of aſtoniſhment to nations conſumed by turbulent paſſions, and addicted to exceſſes of every deſcription. Need we then ſearch for the cauſe of this pretended ed phenomenon (of which the ſalubrity of the Egyptian climate alone is, perhaps, ſufficient to afford a ſatisfactory explanation) in an extraordinary advancement in ſcience, reſpecting the particulars of which we are poſſeſſed of no accurate information?

We know, however, that, on the ſubject of gymnaſtic exerciſes, the ideas of the Egyptians were wholly erroneous. They deemed them capable merely of altering the order and equilibrium of the vital functions. They were aware, indeed, that exerciſe may produce a momentary increaſe of ſtrength; but they maintained, that it exhauſted its ſource, and deranged its equable diſtribution. In order to juſtify, or rather to apologize for an aſſertion ſo entirely devoid of foundation, it may be ſaid, that the heat of the Egyptian climate renders exerciſe leſs neceſſary to the inhabitants, and that violent exertions of bodily ſtrength may ſometimes prove injurious to perſons who are accuſtomed to lead a ſedentary life. Perhaps, too, the prieſts only meant to ſpeak of gymnaſtic exerciſes, as applied to the treatment of acute diſeaſes, of which Herodicus made ſo many unfortunate trials in Greece, and of which the inconveniences and dangers were ſo well pointed out by Hippocrates.

We ſee, then, that in Egypt, the prieſts had uſurped the excluſive empire of knowledge, and that they were the only phyſicians of the nation.

Depoſitaries of all the branches of ſcience, whether real or falſe, they were enabled to tyrannize over the people, both by the falſehoods which they took ſo much pains to promulgate, and by the truths, of which they reſerved to themſelves the excluſive benefit and enjoyment. The ſcience of medicine was taught in their temples, with thoſe myſteries of initiation, which are calculated to create believers, rather than enlightened votaries of truth. Beſides, they ſubjected the art to abſurd regulations, which precluded all further improvement. That law, which determined the time for the application of remedies in all diſeaſes without diſcrimination, prohibiting any new experiment, and even any new obſervation, would alone have been ſufficient to keep the art in a ſtate of eternal infancy. That law, again, which divided the profeſſion into as many different branches, as there were diſeaſes, or organs affected, ſeemed to regard the human body as a machine, the different parts of which may be ſeparately formed or repaired, without taking into conſideration the influence of the ſenſibility, which is diſtributed over all the organs of the body, and enables them to exert a reciprocal action upon one another, according to rules, which cannot always be explained by their particular conformation. Finally, that law, which obliged the ſon to follow the profeſſion of his father, was, no doubt, intended to ſecure to each generation the acquirements of the preceding age; but it evinces as great an ignorance of the real operations of the human mind, as of the circumſtances which determine its firſt and permanent biaſs.

Among the Chaldeans and Babylonians, who are repreſented to us as having devoted their attention to aſtronomical ſtudies, medicine muſt have borrowed from this ſource ſuch views as were applicable to its particular object. We even find traces of the application of aſtronomy to medicine, among the Greeks, who cultivated the latter with much more ſucceſs. Hippocrates himſelf has not diſdained to make uſe of thoſe general concluſions, which a knowledge of the heavens and of the courſe of the ſeaſons may ſuggeſt to the ſkilful phyſician.

However, if we may credit Herodotus, the ſick at Babylon were ſtationed in places of public reſort, and remained expoſed for the inſpection of paſſengers, who were requeſted to furniſh them with advice and the means of cure. The paſſengers, if they recogniſed, or thought they recogniſed, any analogy between their caſe and other diſeaſes which they had formerly had an opportunity of obſerving, pointed out the remedies or modes of treatment, by which the latter had been cured. It is even aſſerted by Herodotus, that every one was obliged to give ſome advice about each diſeaſe. Their preſcriptions were frequently followed, and did not always prove the death-warrants of the patient.

In Greece, after the example of Egypt, medicine was at firſt cultivated in the temples. Several of the deities had the ſuppoſed office of preſiding over the health of their votaries, and participated in their offerings, as well as in their homages. But thoſe deities who were held in the higheſt veneration did not confine themſelves to this profeſſion alone. Thus, Apollo both healed the ſick, and propheſied future events. His prieſts, however, ſoon finding, that the latter branch of their trade was by far the moſt lucrative, renounced, in his name, the practice of the medical art. Some men of ſound underſtanding, whom theſe pious prieſts endeavoured to repreſent as very dangerous members of ſociety, did not heſitate to conclude from this conduct, that idle curioſity has a far more powerful influence upon the human heart, than any other paſſion, and that of two impoſtures, the moſt abſurd is ſure to ſucceed beſt. Diana, Epione, Minerva, and Juno, had alſo aſſigned to them the exerciſe of particular branches of the art.

But Eſculapius ſoon acquired the aſcendency. Certain prieſts of Apollo combined, in order to accompliſh this holy and profitable undertaking. Seizing upon the practice of medicine, as a forſaken inheritance, from which it was ſtill poſſible to derive ſome advantage, they erected ſpacious and commodious temples to the new god of health. It is for this reaſon, that the Greeks, whoſe language animated, in a manner, every object by metaphors and allegory, called Eſculapius the ſon of Apollo. It is not difficult to divine what became of the riſing art, when cultivated by theſe avaricious and hypocritical prieſts. Ariſtophanes informs us in what manner their deity delivered his oracles. Thoſe who came to conſult him began by purifying themſelves in the luſtral water: they then depoſited their offerings on the altar, and repoſed on beds placed in the middle of the temple. As ſoon as they were believed to be aſleep, a prieſt, clothed in the dreſs of Eſculapius, imitating his manners, and accompanied by the daughters of the god, that is, by young actreſſes, thoroughly inſtructed in their parts, entered, and informed each perſon of the remedy, which, from the recital of his complaint, was judged to be moſt conducive to his cure. As the god was not believed to reveal himſelf but in a dream, the patients were couched on the ſkins of ſacrificed rams, in order that they might procure celeſtial viſions. Not to feign the moſt profound ſleep, even when they were perfectly awake, was an unpardonable crime. Nor was it leſs dangerous for the patients to preſume to doubt, that what they had heard with their ears, or ſeen with their

eyes,

eyes, was a heavenly dream. The ſervant, in whoſe mouth Ariſtophanes places this narrative, deſcribes, in a truly comic manner, the craft and pious avarice of theſe godly men. The dexterity and promptitude, with which the prieſt collected and put into his bag every thing that was placed on the altars and the table of ſacrifice, excited, he ſays, his admiration, and gave him a very high idea of the addreſs of the god.

In Lucian's time, the impoſtures of prieſtcraft had already fallen into diſrepute. But the worthleſs perſons, whoſe patrimony they were, did not allow themſelves to be diſcouraged. Thoſe who are in the leaſt acquainted with the hiſtory of this epoch, know what perſevering efforts were employed for the revival of thoſe articles of belief, and thoſe practices, which had been rejected by all men of ſound underſtanding;—efforts, which were no doubt very fruitleſs, but which oftener than once afforded an opportunity of obſerving the profound hypocriſy and audacity of theſe ſacred impoſtors. We find in Lucian the hiſtory of a wretch of this deſcription, who, having eſtabliſhed himſelf in an old temple of Eſculapius, ſported in the moſt impudent manner with the credulity of the people, and even found means to entrap in his ſnares ſome old and fooliſh Roman ſenators. The relation is curious in every reſpect, and ſerves to ſhew the powerful, though generally groſs artifices, by means of which the ignorant and credulous part of the people have, in all ages, been deluded *.

The ancient prieſts, according to Plutarch, erected their temples on high grounds, and with a fine expoſure. The air reſpired in them was naturally pure, from the elevation of the ſoil, and was rendered ſtill more ſalubrious, by the woods which encompaſſed the temples. Theſe woods themſelves became the objects of religious veneration: they were preſerved with great care; and their ſombre ſhade contributed much to the awe with which the people naturally beheld the abode of their deities. The temples of Eſculapius, in particular, enjoyed all theſe advantages, which ſeemed to be more peculiarly appropriate to them; for an unhealthy abode would have been very unſuitable to the god of phyſic. If his advice did not always reſtore health, it was at leaſt becoming, that the patients ſhould contract no new diſorders at the foot of his altars. In conſequence of ſome prudent precautions, in this reſpect, many cures muſt have been accompliſhed by the diverſion which the patients experienced in the courſe of their journey to the temples, by an exerciſe, to which, perhaps, they had been but little accuſtomed,

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* See the *Alexander* of Lucian.

tomed, by the beneficial conſequences of a change of air, by the invigorating effects which an elevated ſituation produces upon man, and indeed upon the generality of animals, and, laſtly, by the ſtill more invigorating effects of hope. Eſculapius acted like a certain deſcription of phyſicians, who poſſeſs more cunning than real talents: he eſtabliſhed himſelf in ſituations, the ſalubrious influence of which left him little or nothing to do; and he maintained his reputation the better, that he had leſs occaſion to labour, in order to acquire it.

The temples of Eſculapius were very ſpacious; and within their walls, there were convenient lodgings for the prieſts; but, as the deity did not permit any perſon to die within them, which certainly would have been very indecorous, thoſe perſons who were afflicted with ſevere diſorders, and women in the laſt ſtages of pregnancy, were obliged to remove to the neighbourhood; and they often remained in the open fields expoſed to all the injuries of the weather. The deity, too, forbade any part of the offerings and victims to be conſumed out of the temple. From this prohibition, which was, no doubt, very politic, we ſee, that he was both wiſe and provident, and had the welfare of his miniſters no leſs at heart, than his own fame and character.

Of the great number of temples dedicated to Eſculapius, the moſt celebrated were thoſe of

Epidaurus, of Pergamus, of Cos, and of Cnidos. The temple of Cos was burnt in Hippocrates' time. The walls and pillars of it were covered with inſcriptions, briefly deſcribing the hiſtory of diſeaſes, and giving an account of the remedies which had been ſucceſsfully employed for their cure according to the advice of the deity. People of affluence had theſe inſcriptions engraved on metal, on marble, or on ſtone; the poorer ſort had them carved on mere tables of wood. However imperfect theſe deſcriptions of diſeaſes, and of the methods of cure may have been, their collection was, nevertheleſs, very valuable. They formed, as it were, the firſt rudiments of the art, and diſcovered ſome faint traces of the method of obſervation and experiment, which alone is capable of placing it on a ſolid baſis.

The prieſts of Eſculapius were all ambitious to paſs for his deſcendants. Thoſe who preſided over the ſchools of Cnidos, Rhodes, and Cos, alſo aſſumed the name of *Aſclepiades*.

The ſchool of Rhodes was no longer in exiſtence in Hippocrates' time. That of Cos, where this great man was born, and that of Cnidos, its rival, flouriſhed a conſiderable time together. To their mutual jealouſy may be aſcribed the progreſs which the medical art ſuddenly made at this period. Cnidos gave birth to ſeveral diſtinguiſhed phyſicians, and among others to Euryphon, who publiſhed the *Cnidian Sentences*, during the youth of Hippocrates, and to Cteſias who practiſed medicine at the court of Artaxerxes, about the ſame time. The latter became equally famous for the hiſtorical memoirs *, with which he enriched the literature of his country, and for his ſucceſs in the exerciſe of his profeſſion.

SECTION II.

Cultivation of Medicine by the firſt Philoſophers.

HITHERTO phyſicians, choſen, as we have ſeen, ſucceſſively from among the claſs of poets, of heroes, and of prieſts, had been but mere empirics, and often, indeed, but miſerable quacks. They obſerved diſeaſes and their ſymptoms, they tried different remedies, they noted their effects, and in new caſes they judged from analogy. Their theory, which was as vague as their practice was undetermined, was buried, in a manner, in the details of minute and ſubtile rules, or was compriſed in a few general propoſitions, which were too far removed from the actual nature of the facts, to admit of any uſeful application. The ignorance of the people had ſpared phyſicians the trouble of giving a more rational form to their art, and the credulity of the public, the offspring of this ſame ignorance, had accuſtomed the more enlightened claſs, to a culpable ſyſtem of deception and habitual falſehood.

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* Theſe memoirs were, in reality, of no great value, and ſcarcely intitled their author to the fame which he acquired by them.

But certain men, of a nobler character and more ſound underſtanding, ſoon began to direct their attention to the ſtudy of the riſing arts. At firſt, they employed themſelves with thoſe which related to their moſt immediate wants. The ſcience of public and private morals was doubtleſs regarded by them as belonging to this claſs; and, accordingly, we ſee them employing their utmoſt ſagacity in the reſearch of its rules, exerting the ſtrength of their judgment in their delineation, and inculcating, with all the commanding powers of their eloquence, the advantages which accrue, both to individuals and to ſociety in general, from a rational, but entire obedience to theſe immutable laws. Natural philoſophy, aſtronomy, and geometry, which ſciences were all in their infancy, became at the ſame time the objects of their contemplation. From this inveſtigation, ſuperficial as it no doubt was, of the different claſſes of natural phenomena, they acquired the habit of a certain method in their proceedings, which ſoon became a ſort of neceſſary want to them.

When theſe ſages afterwards came to turn their attention to medicine, they were able to throw a new light upon the ſcience. Accuſtomed, as they had been, to arrange, in a certain order, the different branches of their knowledge, to trace relations between them, and to connect them together, they perceived how requiſite it was to claſs the undigeſted maſs of medical obſervations, before they could be ſubjected, with advantage, to the teſt of reaſoning. And if, on the one hand, in order to diſcover ſome connecting principle among ſo great a number of facts, it was abſolutely neceſſary to reſort to claſſification; on the other hand, it was no leſs requiſite, to impreſs the concluſions which were obtained, firmly on the memory, to arrange them, and to expreſs them in the form of general rules.

The revolution, which theſe early philoſophers effected in the medical art, was evidently a work of neceſſity. The time was come for drawing it forth from the receſſes of the temples, and for diſſipating, at leaſt, in part, the obſcurity in which ignorance and quackery had involved it. If theſe firſt attempts had done nothing more than bring it fairly to light, they would ſtill have the merit of greatly contributing to its progreſs. From that time forward, a rational ſyſtem was ſubſtituted in the place of undigeſted collections of rules;

enterpriſing geniuſes began to connect the principles of the ſcience with thoſe of the other branches of human knowledge; and its intimate relation to the different parts of natural and moral philoſophy, became every day more apparent to minds, whom books could not yet miſlead from the path of pure obſervation.

Theſe philoſophers, then, freed medicine from its ſuperſtitious and hypocritical character. They transformed an occult and ſacerdotal doctrine into a popular ſcience, into a common art. This reform was of infinite ſervice, both to medicine and philoſophy; but it muſt be confeſſed, that its happy effects were, in ſome degree, combined with ſerious diſadvantages. For in remedying errors, the reformers often fell into a dangerous extreme. Not ſatisfied with applying to medicine that general and ſublime ſpecies of philoſophy, which preſides over all the ſciences, and which alone is capable of illuſtrating their principles and operations, they vainly attempted to transfer to it the imaginary laws of their ſyſtems of natural philoſophy, and various other conjectures, which were the more fertile ſources of error, when thus applied, that the particular objects to which they related had abſolutely no connection with the living ſyſtem.

Thus, Pythagoras endeavoured to explain the laws of the animal economy, the formation of diſeaſes, the order of their ſymptoms, and the action of medicines, by the powers of numbers. Democritus, again; referred them to the motion, and different relations of figure and poſition, of the primary atoms of matter; while Heraclitus attempted to account for them by the various modifications, of which the creative and preſervative fire of the univerſe is ſuſceptible. It was but natural, that the hypotheſis, which each of them employed for illuſtrating the production of animated bodies, ſhould be alſo applied by him to explain the ſeries of phenomena brought to view by their ſpontaneous evolutions, by the agency of external ſubſtances, by the changes of which they are ſuſceptible, and by their final deſtruction, or that alteration of form which we call their death. Hence aroſe ſo many futile theories, of which we may find examples, in the works of Plato, Ariſtotle, and Plutarch, and from which the writings of Hippocrates himſelf are not wholly exempt. Empedocles, for example, the diſciple of Pythagoras, affirmed, that the muſcular fleſh was compoſed of the four elements combined in equal proportions; he ſuppoſed the nerves*, when cooled by the external air, to form the nails; he thought the perſpirable matter and tears reſulted from the fuſion of the blood, and imagined the oſſeous matter of the ſyſtem to proceed from the union of earth and water. Timæus of Locris framed a new ſyſtem of coſmogony, from which he deduced his phyſiological views and methods of cure. Eudoxus, Epicharmus, Democedes, &c. adopted the opinions of the Italian ſchool founded by Pythagoras; and their ſyſtem of phyſic was ſupported and guided by that philoſophy ſo celebrated, and yet ſo little underſtood, even by the ancients, but for which, when we conſider its beneficial effects in a moral and political point of view, it is impoſſible not to be inſpired with ſentiments of veneration.

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* By the term *nerves*, the ancients ſeem, in general, to have meant *the tendons*; however, the word appears to have been ſometimes applied by them to the real nerves.

To conclude; all men of letters, whom a ſedentary life and the nature of their labours diſpoſe to melancholy habits, cultivated medicine as a ſubject of meditation upon themſelves. Their habitual valetudinary ſtate obliging them often to invoke its aſſiſtance, they had the additional motive of the proper care and preſervation of their own health, to incite them to the ſtudy. Their firſt acquirements, ſuperficial as they often were, could not fail to prove, in active minds, the germs of numerous errors. Thoſe among them, who did not combine the obſervation of diſeaſes with their theoretical opinions, ſuch as they had been delivered in the ſchools by oral communication, or detailed in the ſmall number of written works, which exiſted in thoſe early times, allowed themſelves to be eaſily deluded by romantic notions; and the cuſtom of ranging and ſyſtematizing all their ideas, rendered their errors more ſerious and dangerous.

Of all the philoſophers, who at that time devoted themſelves to the ſtudy of medicine, no one preſerved himſelf more free from the ſpirit of hypotheſis, than Acron of Agrigentum in Sicily. This bold and original genius, whom the empirics of latter times have regarded as their chief, was deſirous to refer the art of medicine to experience alone. Accordingly, he reduced all the reaſonings about diſeaſe, to the appreciation of the different ſymptoms which admitted of compariſon, and to the diſcovery of analogies, from which he obſerved, that we may often draw the indications of cure. But, although he enjoyed a high reputation in his life-time, his opinions could not overcome the aſcendency of more poſitive and dogmatical theories; and it was not till long after, that they became the rallying point of a ſect of reſpectable phyſicians *. Although, too, theſe opinions were leſs dangerous, when applied to practice, than thoſe of

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* See note [B.]

his opponents, it is but too certain, that a ſpirit of rivalſhip carried the adherents of both almoſt equally far beyond the bounds of reaſon, which, indeed, would have eaſily reconciled them; for the diſpute, as I have elſewhere ſhewn *, turned, properly ſpeaking, upon mere words.

The philoſophers of antiquity, then, both improved and injured the ſcience of medicine. They reſcued it from undiſcerning ignorance; but they precipitated it into a variety of hazardous conjectures: they delivered it over, from the blindneſs of empiriciſm, to all the raſhneſs of dogmatiſm. In ſhort, its lot was the ſame as that of moral philoſophy. Medicine, at firſt, as placed in the hands of the poets, exhibited only an aſſemblage of beautiful images or refined ſentiments; while, in the hands of the prieſts, it adopted the vague language, and myſterious tone of ſuperſtition; and, in the hands of theſe primitive philoſophers, whoſe exertions, in other reſpects, claim our warmeſt acknowledgements, its ſcattered, confuſed, and undigeſted materials, were combined, and formed into more or leſs regular, and more or leſs perfect ſyſtems: but it uſurped the principles of many other ſciences, which were themſelves but in a crude ſtate; it ſhared in their errors, which proved the more injurious to it,

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* In the work, intitled, "Of the degree of certainty to be aſcribed to Medicine."

as theſe ſciences had, for the moſt part, little connection with it. We may even venture to aſſert, that it made, in ſome meaſure, the complete round of the falſe ſyſtems, which prevailed in the different branches of human knowledge, and which ſucceeded each other by turns.

SECTION III.

Of Hippocrates and the School of Cos.

AT length Hippocrates appeared. He was of the family of the Aſclepiades, and his anceſtors, during ſeventeen generations, in a regular ſucceſſion from father to ſon, had followed the profeſſion of phyſician in the iſland of Cos, over the ſchool of which place they preſided. Surrounded, from his infancy, with all the objects of his ſtudies; inſtructed in eloquence and philoſophy, by the moſt celebrated maſters; having his mind enriched with the largeſt collection of obſervations, which could at that time have exiſted; and endowed, in fine, by nature, with a genius, which was at once penetrating and comprehenſive, bold and prudent, he commenced his career, under the moſt favourable auſpices, and purſued it, during a period of more than eighty years, with that degree of renown, which was equally due to his talents, and to the greatneſs of his virtuous character.

Euryphon, as we have already ſeen, had juſt publiſhed "the Cnidian Sentences." Herodicus, too, by the revival of gymnaſtic medicine, the original invention of which was aſcribed to Eſculapius, had given to the art a more regular and ſcientific form. They knew how to obſerve diſeaſes, and were acquainted with the moſt general remedies, ſuch as veneſection, emetics, cathartics, and bathing, the uſe of inciſory inſtruments, and of the actual cautery or fire; and, although a certain routine, numerous falſe theories, and the influence of ſuperſtition, continued to deform the prevailing methods of treatment, yet the glimpſes of a happier dawn were perceived, at intervals, in almoſt all the branches of medicine.

At this period, the doctrines of Pythagoras and Heraclitus divided the philoſophical world.—Without having loſt all the attractions of novelty, they already enjoyed that reſpect which the power of cuſtom procures to the opinions of antiquity; a reſpect, which is the more profound, the more the minds of the people are rude and uncultivated.

At the ſame time, at Crotona in Greece, flouriſhed the Italian ſchool, which had been founded by Pythagoras, or, rather, by his diſciples, who, improving upon his benevolent views, embraced, in their reſearches, all the branches of ſcience, and made them conſpire to the vaſt plan which they had conceived of ameliorating the human race.

It was in theſe fortunate circumſtances, that Hippocrates appeared*, as it were, on a ſudden, and procured to the Coan ſchool, a laſting pre-eminence, to which it was doubtleſs well intitled, ſince it had been able to produce ſuch rare talents. Amid the ſports of childhood, he received, from the mouth of his parents, the elementary notions of medical ſcience; by viewing diſeaſes, he learned to diſtinguiſh them; by witneſſing the preparation and employment of medicines, their uſe and their virtues became equally familiar to him. The firſt objects which ſtrike the young and curious ſenſes, the firſt compariſons which they ſuggeſt to the infant mind, the firſt judgments of growing reaſon, have a greater influence on the remaining part of life, as the traces which they leave, and the habits which they form, are, for the moſt part, indelible. It is then, that the bent of the character, and the particular caſt or direction of the operations of the mind are determined. To the fatal diſpoſition to ſatisfy ourſelves with words, and to affix to thoſe we employ, erroneous or vague ideas of the things they were meant to expreſs, may, perhaps, in a great meaſure, be aſcribed the cuſtom of conſtantly figuring to ourſelves objects which we have never ſeen, and of ſubſtituting the fictions of imagination for the works of reality. A ſound habit of judgment depends upon the juſtneſs and accuracy of the ſenſations; and the organs, which are deſigned for the reception of the latter, require culture, that is, a well-directed employment. Now, as nature or the objects ſurrounding us are our proper teachers, and, as their inſtructions differ from thoſe of men or books, in this reſpect, that they are always adapted to our faculties, they are conſequently the only ones which are ſeldom or never fruitleſs, and the only ones which never miſlead us. We muſt therefore, in general, early familiarize ourſelves with the images which are deſtined afterwards to furniſh the materials of all our judgments: and, with regard to each art in particular, the man who devotes himſelf to it, cannot place himſelf too ſoon among the objects of his ſtudies, or in that ſituation, which is moſt ſuitable to the nature and deſign of his obſervations.

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* He was born in the 80th Olympiad.

Hippocrates was not leſs favoured by circumſtances, than by nature. The latter had endowed him with the moſt happy frame of body: the former furniſhed him, from his earlieſt infancy, with every thing which could moſt ſucceſsfully contribute to his education.

Good ſenſe, joined to the faculty of invention*, is the diſtinguiſhing characteriſtic of a ſmall number of privileged men: (I mean that good ſenſe, which ſoars above prevailing opinions, and the deciſions of which anticipate the judgments of ages). Hippocrates was of this number. He ſaw that too much, and yet not enough had been done for medicine, and he accordingly ſeparated it from philoſophy, to which they had not been able to unite it by their true and reciprocal relations. He brought the ſcience back again into its natural channel—that of rational experience. However, as he himſelf obſerves, he introduced both theſe ſciences into each other, for he regarded them as inſeparable; but he aſſigned to them relations which were altogether new. In a word, he freed medicine from falſe theories, and formed for it ſure and ſolid ſyſtems: this he with juſtice ſaid, was to render medicine philoſophical. On the other hand, he elucidated moral and natural philoſophy, by the light of medical ſcience. This we may, with propriety, call, with him, the introduction of the one into the other. Such, then, was the general outline of his plan.

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* The conſtituents of true genius.

The true philoſophical ſpirit, with which Hippocrates was animated, is fully diſplayed in his hiſtory of epidemics, and in his books of aphoriſms. His epidemics form not merely beautiful deſcriptions of ſome of the moſt ſevere diſeaſes, but alſo point out, in what points of view obſervations upon them ſhould be made; how we may arreſt their moſt ſtriking features, without bewildering ourſelves, and without miſleading and fatiguing the reader or hearer, by uſeleſs details. His books of aphoriſms, have, in all ages, been regarded as models of grandeur of conception, and preciſion of ſtyle. Through the whole of them, we may remark that truly univerſal method, the only one which is adapted to the mode in which our intellectual faculties are exerciſed; and which, in every art, and in every ſcience, by making the principles flow naturally from the obſervations that have been collected, transform the deductions from facts, into general rules;—a method, which has been only very lately reduced to a ſyſtematic form, and which, in former ages, could only be gueſſed at by a few men of comprehenſive minds.

This new ſpirit of improvement, that was introduced into medicine, reſembled a ſudden light

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which diſpels the phantoms of darkneſs, and reſtores to bodies their proper figure and natural colour. By rejecting the errors of former ages, Hippocrates learned more fully to avail himſelf of the uſeful part of their labours. The connection and dependence, both of the facts which had been obſerved, and of the concluſions which were legitimately deduced from their compariſon, were now perceived with a degree of evidence which, till then, had been unknown. All the diſcoveries were certainly not yet made; but from that moment, inquirers began to purſue the ſole path which can conduct to them; from that moment, if they had been able to preſerve themſelves from deluſion, they would have poſſeſſed ſure means of eſtimating, with preciſion, the new ideas which time was deſtined to develope; and if the diſciples of Hippocrates had underſtood his leſſons well, they might have laid the foundation of that analytical philoſophy, by the aid of which the human mind will be henceforth enabled to create to itſelf, as it were, daily, ſome new and improved inſtruments of advancement.

Thus, then, this great man, far from baniſhing from medicine that true ſpecies of philoſophy, with the aid of which it cannot diſpenſe, extended, on the contrary, the advantages which they may derive from each other, by determining the limits that ſeparate them, and uniting their general principles and particular doctrines, by the only relations that are really common to them.

Hippocrates has not explained his method in a manner ſufficiently detailed, to enable us to examine all the particulars, with a minute attention: but he points out, in ſeveral diſtinct treatiſes, the general ſpirit which to him appeared to be the ſole one calculated to direct, with certainty, the different branches of medical reſearch; and to improve or facilitate its inſtruction. Such is the object of the two eſſays intitled, Περὶ ἀρχάιης ἰητρικῆς and Περὶ τέχνης.

But this excellent method is far better illuſtrated in his practical works; for example, in his epidemics, in his books of aphoriſms, in his different treatiſes on regimen, and I may add, in his diſcourſe on air, water, and ſoils. It is in them that his medical philoſophy is truly diſplayed, and that the author, while he inſtructs us in all the myſteries of a delicate and ſound habit of obſervation, diſcloſes to us the ſtill more refined and difficult art of compreſſing the reſults with ſuch a preciſion of reaſoning, as to leave no doubt reſpecting their juſtneſs. Pure obſervations are, in ſome meaſure, the ſubſtance of his general views: accordingly, as Bordeu has remarked, the latter ought only to form the concluſion. Hence, the peruſal of his works is, to this day, one of the moſt inſtructive exerciſes to which we can apply; not, that the facts which are found contained in them, have not been reviſed by the moderns, in collections that are infinitely more ample and perfect; but becauſe no other writer, without exception, initiates us ſo far into the knowledge of nature, or teaches us to interrogate her with that wiſe caution, and that ſcrupulous attention which alone can enable us to trace, from her anſwers, thoſe principles and rules, which muſt always be recogniſed as genuine.

We have already obſerved, that Hippocrates had found in the boſom of his family, and, in a manner, around his cradle, all the means required for the developement of his genius. But he was far from contenting himſelf with this ſpecies of early education. Celebrated maſters, in almoſt all the branches of ſcience, were beginning to fix the diſtinguiſhed rank which the Greek people have enjoyed among the nations of the world. We have alſo remarked, that the gymnaſtic ſyſtem of medicine had been introduced by Herodicus, and was at that time in high vogue. This phyſician taking advantage of the predilection of the Greeks for bodily exerciſes, attempted to point out a general method of curing diſeaſes by their means. Experience had taught them, that nothing contributes more to the preſervation of health, and it was not very difficult to perſuade them, that the ſame means were equally proper for reſtoring it when loſt. In ages, when ignorance was much more prevalent, the prieſts combined medicine with religion. Herodicus combined it with the inſtitution moſt generally eſtabliſhed in the ſtates of Greece, with that ſort of amuſement, for which the common people evinced the greateſt partiality*.

Hippocrates became his diſciple, and profited by all the true and uſeful particulars which his practice could furniſh. But he was one of the firſt to demonſtrate the neceſſity there was for limiting the doctrines of his maſter in their application to practice; and more attentive obſervations and experiments ſoon convinced him, that, in a great majority of diſeaſes, exerciſe not only does not contribute to the cure, but, on the contrary, renders all the ſymptoms more ſevere and dangerous.

About the ſame time, Gorgias the orator, delivered public lectures on eloquence, at Athens. Hippocrates regarded this ſtudy as, in ſome meaſure, the finiſhing part of his education. He was aware how much the talent of ſpeaking and of writing contributes to the ſucceſs of truth; and appears alſo to have perceived how much the art of reaſoning itſelf is dependent on language.

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* See note [C.]

It was in this excellent ſchool, then, that he received the elements of that ſimple and maſculine ſtyle which is peculiar to him :—a ſtyle perfect in its kind, and particularly well adapted to the ſciences, by the clearneſs of its terms, and the force of its expreſſion ; and not leſs remarkable for the livelineſs of its images, and for that rapidity which ſeems only to glance over the different objects, but which, in reality, inveſtigates them all thoroughly, by arreſting and comparing their true diſtinguiſhing features. If hiſtory furniſhes us with a juſt account of this celebrated orator, we may conclude, that Hippocrates really owes to him, in part, the valuable talent of always embelliſhing his thoughts without the aid of extraneous ornaments, and of preſerving his language in that mean degree of elegance, which, perhaps, is the only deſcription of ſtyle allowable to the phyſician, inceſſantly interrupted, as he is, in his ſolitary ſtudies, by the daily avocations of his profeſſion.

Celſus and Soranus affirm, that Hippocrates alſo ſtudied under Democritus. But the phyſician was already renowned for his practice, when he ſaw the philoſopher for the firſt time. Sent for to viſit him by the Abderites, he found a ſage in the perſon of him whom theſe people had deſcribed to him as a mad man : but he was then too old to return to ſchool, and if he really derived any information

formation from this ſuppoſed patient, it was ſolely from ſome ſhort converſations which he had with him. Beſides, Hippocrates ſeems to have given the preference to the doctrines of Heraclitus; for they form the baſis of his ſyſtem of general philoſophy, which, in truth, is nothing but a mere tiſſue of conjectures: he has introduced them into his phyſiology, and even has not always entirely baniſhed them from his practical obſervations and methods of cure.

On his entrance into the world, Hippocrates ſignalized himſelf by a very remarkable feat. Such, at leaſt, is the account given by Soranus. Hippocrates, he ſays, attended, in conjunction with Euryphon, a phyſician older than himſelf, the young Perdiccas, ſon of Alexander king of Macedonia. This prince was afflicted with a ſlow fever, of which no one could diſcover the cauſe, but which ſenſibly undermined his health and ſtrength. The penetration of the young phyſician led him to ſuſpect that the diſeaſe depended upon ſome moral affection. As he was obſerving attentively the demeanour, the words and geſtures, and even the moſt delicate feelings of his patient, he perceived, that the preſence of Phila, who had been formerly a miſtreſs of his father's, cauſed him to change colour. He accordingly pronounced that love alone was capable of curing the complaint which it had occaſioned; and, as the fair Phila ſhewed herſelf not inſenſible to the ſituation of the young prince, the exhibition of a very gentle remedy had the deſired ſucceſs. A cure of a ſimilar deſcription is attributed to Eriſiſtratus.

Hippocrates, after the example of the philoſophers of his time, undertook various journies. He traverſed the whole of Greece, and its colonies, and the greater part of the iſlands of the Archipelago: he even extended his route northwards, as far as the provinces which were inhabited by the wandering hords of Scythians. Theſſaly and Thrace were the two parts of Greece in which he reſided for the greateſt length of time. His obſervations on epidemical diſeaſes were made at Lariſſa, Perinthus, Thaſos, Olynthos, Œniadæ, Pheræ, and Elis.

In the harangue of the deputation, which is aſcribed to Theſſalus his ſon, it is ſaid, that Illyria and Pæonia being ravaged by the plague, the inhabitants of theſe countries made an offer to Hippocrates of conſiderable ſums of money, in order to induce him to come to their relief; but that certain winds, which at that time prevailed, led him to foreſee, that the malady was likely to penetrate into Greece, and he was unwilling to quit his own country, at a moment of ſuch urgent danger. By his orders, his two ſons, his ſon-in-law, and his diſciples repaired to the different ſtates, with the neceſſary inſtructions and remedies, both for preventing the ſpreading of the contagion, and for curing thoſe perſons who were already infected. He himſelf went to Theſſaly, and from thence, ſome time after, to Athens, where his advice was productive of ſuch great benefits, that he was honoured, by a ſolemn decree of the people, with a crown of gold, and was initiated into the ſacred myſteries of Ceres and Proſerpine.

This relation can, with difficulty, be reconciled with that of Galen and Thucydides. Galen ſays expreſsly, that the plague of Athens, during which Hippocrates gave ſuch uſeful counſels, came from Ethiopia. It muſt therefore have been the great plague which Thucydides has depicted in ſuch ſtriking colours. Now, this plague firſt began to rage during the Peloponneſian war, in the ſecond year of the 87th olympiad, and it is univerſally agreed, that the date of Hippocrates' birth is about the 80th olympiad. According to theſe ſeveral data, he was, therefore, only thirty years old, at which age he might have been ſkilled in phyſic, but could not well have had two ſons and a ſon-in-law, in a condition to practiſe. Beſides, how comes it, that Thucydides has not even recorded his name in a deſcription ſo accurate and ſo detailed? How comes it, that, on the contrary, he expreſsly aſſerts, that the phyſicians did not underſtand any thing about the nature of the diſorder, that the patients died, with equal certainty, whether attended by phyſicians or not; and that even the phyſicians themſelves were carried off in proportionably much greater numbers, becauſe their duty obliged them to be conſtantly near the perſons of thoſe infected with the diſorder?—In the mean time, till theſe difficulties ſhall be removed, the author of the travels of the young Anacharſis admits as certain the facts which are reported in the oration of Theſſalus.

Among the letters aſcribed to Hippocrates, there are many which are evidently ſuppoſititious; as, for inſtance, thoſe addreſſed to Cratevas, who lived in the time of Pompey; thoſe to Dionyſius of Halicarnaſſus, who was cotemporary with Auguſtus; thoſe to Mecænas, the favorite of that too celebrated emperor; and thoſe to Philopœmen, the general of the Achæan league. But the two letters of Democritus to Hippocrates ſeem to bear the ſtamp of truth. The philoſopher reminds him of their firſt interview, and of the ſubjects of their converſation. " I was at that time engaged in " writing," he ſays, " upon the order of the uni- " verſe, the direction of the poles, and the courſe " of the ſtars. You had an opportunity of judg- " ing, that the madneſs was on the part of thoſe " who accuſed me of being inſane." The anſwer of Hippocrates is worthy of them both, and breathes a profound ſentiment of melancholy. In it, he complains of the fatigues of his profeſſion, of the unjuſt cenſures to which it is expoſed, and of the ingratitude of the public towards thoſe who exerciſe it with moſt zeal and ability. Though advanced in age, he does not ſcruple to confeſs, that he was yet far from having carried the theory and practice of his art to that degree of perfection, of which they are ſuſceptible; and he declares, that, in the courſe of a long life, which had been devoted to the ſervice of his fellow creatures, and which had not paſſed without ſome degree of renown, he had been oftener blamed for miſconduct, than praiſed for ſucceſs.

Yet, no one ever was more deſerving of happineſs than Hippocrates. No one ever diſtinguiſhed his ſojourn on earth by more ſignal ſervices, or by the conſtant exerciſe of more exalted virtues. And no one ever formed to himſelf more ſublime ideas of the duties of his profeſſion. Theſe we may find ſketched and compreſſed, as it were, in the oath of his ſchool: in ſeveral paſſages of his writings, he has recorded them in the truly affecting language of virtue and of truth; and, what is of more conſequence, he practiſed them with ſentiments of benevolence, which ſhould render his memory as much cheriſhed and beloved, as his genius and works have been reſpected and admired.

In enumerating the qualities which are neceſſary for a phyſician, and the moſt effective means for developing and cultivating them, he ſeems, in a man-a manner, to deſcribe himſelf, and to deliver his own hiſtory. "A phyſician," he ſays, "ſhould "be decent in his external deportment; his man-"ners ſhould be grave, and his conduct moderate. "In the intimate relations in which he is placed "by his profeſſion, with regard to the ſex, it is "incumbent upon him to ſhew great reſerve and "reſpect; and to have the ſanctity of his func-"tions conſtantly before his eyes. He ought not "to be envious, nor unjuſt towards his brethren, "nor abſorbed in the love of gold. He muſt avoid "ſhewing himſelf a great talker; but, at the ſame "time, he muſt be always ready to anſwer the "queſtions which are aſked him, with mildneſs "and ſimplicity. He ought to be modeſt, ſober, "patient, dextrous, and ready to perform every "office appertaining to his art, without feeling in "the leaſt diſcompoſed. He ought to be pious "without ſuperſtition, and honeſt in all the com-"mon affairs of life, as well as in the exerciſe of "his profeſſion. In ſhort, he ought to be a per-"fectly good man; and to join to the purity of an "upright heart, prudence, genius, talent, know-"ledge, and addreſs, which alone can render "the practical application of the rules of his art "productive of real utility."

In another place, he obſerves, "In order to "improve, to a certain degree, the knowledge and "practical ſkill of the phyſician, it is neceſſary (in-

" dependent of natural genius, the place of which, " indeed, nothing can ſupply) that he be placed, " from early infancy, amid all the objects of " his reſearches, and that every means of inſtruction be employed with unremitting aſſiduity: a mind docile and prudent, a talent " of ſagacity matured by ſtudy, a ſpirit of well-directed activity, and, above all, much time " and labour, are eſſential requiſites for improvement in the art."

Hippocrates' own education had been conducted according to the plan he deſcribes: and the model which he formed to himſelf of a virtuous phyſician is the picture of his own life; all the ſtrokes of it are drawn from his own heart. It is not merely the number of patients who were cured by his ſkill and attention, or the poor who were relieved by his acts of beneficence, or the unfortunate perſons who were conſoled by his compaſſionate advices, who may be ſaid to proclaim the praiſes of this great and excellent man: he was alſo a worthy citizen; he defended and graced the ſacred cauſe of liberty, which the corrupting gold of the Perſians placed, perhaps, in much greater danger, than their arms. His bold and generous ſentiments were not the only homage he paid to a divinity, which all great minds adore, and from which all real virtue and happineſs proceed. For we cannot paſs over in ſilence the endeavours which the Perſian king made to entice Hippocrates to his court, the refuſal of Hippocrates, and the noble manner in which he explains the real motives of his conduct. A ſenatus-conſultum of the city of Athens, and ſeveral letters, which are recorded in it, recount theſe circumſtances with ſufficient minuteneſs*.

Perſia happened to be ravaged by the plague. The governors of Aſia Minor wrote to Artaxerxes, to inform him of the high reputation of the Coan phyſician. Artaxerxes anſwered them, and deſired them to make him the moſt liberal offers, in order to induce him to viſit his dominions. The governors forwarded the letter of the Perſian king to Hippocrates, and promiſed, in his name, every reward and honour that he could deſire. The phyſician returned an anſwer in theſe ſtriking words, which ought to be engraved on the memory of all thoſe among his ſucceſſors, who can think, and who can feel. “ I have in my own “ country the food, the clothing, and the habi-“ tation I require: I want nothing more. As “ Greek, it would be unworthy of me to aſpire “ to the riches and grandeur of the Perſians;

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* I have already cited it in the Eſſay “ On the degree of certainty to be aſcribed to Medicine”: but may, perhaps, be allowed to repeat the quotation at a time, when certain writers ſeem to be uſing their utmoſt endeavours to ſtifle all free and generous ſentiments.

" and to ſerve the foes of my country and of " liberty."

Upon hearing this, the Great king, whom the intoxication of power had eaſily perſuaded, that his caprices ſhould become laws to the reſt of mankind, and that there was none who ought not to eſteem himſelf honoured by obedience to them, could not contain his wrath: but immediately wrote to the inhabitants of the iſland of Cos, ordering Hippocrates to be delivered up to him without delay, as he was determined to puniſh his inſolence; and threatening them, in caſe of refuſal, with all the terrors of his vengeance. But the different ſtates of Greece were then united by ties that enſured their common independence. The little iſland of Cos dared to brave the Perſian king; and the inhabitants replied, that they would conſider it as an act of the baſeſt ingratitude, to deliver up their fellow-citizen, to whom they were under many important obligations; and that, by making choice of their iſland for a place of reſidence, and for the exerciſe of his profeſſion, he had merited the ſpecial protection of the laws, by which it was governed; and concluded, by declaring their firm reſolution to defend his life and his liberty, at all hazards*.

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* See note [D].

After a long life, ſpent in the ſucceſsful practice of his art, and in laying the foundation of a ſyſtem of doctrines, on the principles of which his theory and his practice depended; in perfecting its plan of inſtruction, and in forming diſciples worthy to ſupply his place; after a life, which, of courſe, muſt have been happy, whatever he himſelf may have ſaid of it, in moments of irritation and diſguſt, Hippocrates died at Lariſſa in Theſſaly, at the age of 85, or 90, or 104, or even 109 years, if we may credit Soranus his biographer. He was buried between that city and Gyrtona, and his tomb, according to tradition, was for a long time covered by a ſwarm of bees, whoſe honey was employed, with great confidence in its efficacy, for the cure of aphthous diſorders in children.

Death is the ſupreme judge of merit and renown. His terrible hand tears off the maſk of the impoſtor; but renders the great man ſtill greater, and, as it were, more ſacred, than before. Death commonly ſilences envy, at leaſt diſcourages its efforts: or, from the certainty of being no longer importuned by their preſence, the envious often acknowledge all the worth of talents and virtues, and allow a tribute of reſpect to be paid them, the exceſs of which ſhocks their feelings the leſs, as it tends to depreciate the living. The ſufferings, with which mankind have almoſt always ſought to embitter the lives of the greateſt benefactors and brighteſt patterns of the human race, are then viewed in all the blackneſs of their ingratitude, by thoſe who are endowed with any portion of generoſity:—their ſenſeleſs aſhes are heaped with eulogies and honours; and the man who was conſtantly perſecuted with fury, during the time he ſhould have enjoyed the good wiſhes of his fellow-citizens, becomes the object of their worſhip, when their praiſe or cenſure can no longer affect him!

After his death, Hippocrates received univerſal teſtimonies of reſpect and admiration. His genius and his virtues were duly appreciated, and the ſervices which he had rendered to his country and mankind were fully acknowledged. During thoſe early ſtages of civilization, it was cuſtomary for the Greeks to exalt their illuſtrious characters to the rank of gods: their lively and enthuſiaſtic imaginations led them to transfer all their benefactors to heaven, whence they ſuppoſed them originally to deſcend: they were pleaſed with the belief, that the perſon who, during his abode upon earth, had been able to do much good, would be able to do ſo always; and they felt more confidence in claiming aſſiſtance from the hand, which had already ſerved them. Hippocrates, accordingly, had temples erected to him; and his altars were covered with incenſe and offerings, like thoſe of Eſculapius himſelf; and ſince there muſt needs be a deity to preſide over the ſick, who could be more worthy than the Coan phyſician, to receive their prayers, or the vows of their parents and friends!

The phyſicians of every ſchool, the philoſophers of every ſect, were eager to read, to quote, and to comment upon his writings. Each ſchool was deſirous to paſs him for its head; each ſect was ambitious to poſſeſs him. In all thoſe countries where the arts and ſciences have been held in eſteem, his name has been echoed from mouth to mouth, along with thoſe of the ſmall number of men of original genius, who have been juſtly regarded as the creators of the human mind. Among the phyſicians of ſucceeding ages, thoſe, who are moſt deſerving of renown, have been moſt forward to proclaim the fame of Hippocrates. Moraliſts and politicians have borrowed enlarged views and liberal principles, from his writings. The philoſophers, who direct their attention to the proceſſes of the underſtanding, have admired that ſure method, thoſe operations of a mind fully acquainted both with the limits of its powers, and the extent of its means; and that happy art of placing himſelf in a true light, for obſerving the different objects of his reſearches, for claſſing the obſervations according to their natural order, and for combining them with general principles; that is, for drawing concluſions, which but expreſs their relations and connection. The legiſlator has given the authority of law to his opinions, in all queſtions, with reſpect to which the phyſiologiſt muſt direct the deciſion of the magiſtrate. The men of letters have found in him, as we have already remarked, the model of a peculiar ſtyle, and even, we may add, of an eloquence, which combines dignity, with artleſs ſimplicity; a rapid flow, with accuracy of detail; the colouring of a glowing imagination, with the ſeverity of a ſtrong and exact mind, that ſacrifices every thing to truth; and, laſtly, the moſt perfect clearneſs, with the moſt admirable conciſeneſs. And, even in our time, continuing to be ſtudied by phyſicians, to be conſulted by philoſophers, and read by all men of taſte, he is, and always will be univerſally reſpected, as one of the moſt diſtinguiſhed ornaments of antiquity; and his works will always be regarded as one of the moſt valuable monuments of ſcience *.

We have dwelt, at conſiderable length, on theſe early epochs, which are unqueſtionably the moſt important in medical hiſtory. We ſhall paſs more rapidly over the ſucceeding periods.

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* See note [E].

SECTION IV.

Of the other Schools of Greece.

THE ſchool of Cnidos, the rival of that of Cos, is only known to us by what Hippocrates himſelf records concerning it. If we may credit the whole of his account, it appears, in its plan of inſtruction, to have combined the diſadvantages of a blind empiriciſm, with thoſe of a ſyſtem of conjecture: for he affirms, that, on the one hand, they conſidered diſeaſes only, in an individual point of view, and without reducing them, by means of their analogies, to certain claſſes, genera, and ſpecies; while, on the other hand, they did not heſitate to ground, upon theſe inſulated obſervations, certain rules of practice, which, from the impoſſibility of referring them to any fixed and general ſtandard, left no durable impreſſion upon the mind.

The ſchool of Pythagoras, or the Italian ſchool, produced diſtinguiſhed characters in various walks of ſcience, and alſo gave birth to ſeveral able phyſicians. This truly extraordinary man, after having embraced in his reſearches all the branches of natural and moral ſcience, projected the moſt extenſive plan of education, which ever entered into the mind of any ſingle individual. He ſucceeded, too, in accompliſhing his object, and eſtabliſhed his ſchool upon ſo firm a foundation, that it continued to flouriſh, with undiminiſhed luſtre, for a long time after his death; and tyrants and fanatics, with fire and ſword in hand, imagined it to be their duty to attack it, and deſtroy it.

For eſtimating the merits of this philoſopher, we are in poſſeſſion only of a few fragments that have eſcaped the wreck of time; but, if we tranſport ourſelves to the period, in which he lived, theſe ſmall remains may well excite our aſtoniſhment.

It probably was Pythagoras, or ſome of his diſciples, who introduced into medicine the doctrine of *numbers*, that is, who endeavoured to reconcile the general obſervations, which had been made on the animal economy, with the principles of their favourite ſyſtem. The power of numbers, and the advantages which the ancients ſuppoſed to reſult from the knowledge of their properties, in the ſtudy of the other ſciences, have been frequent ſubjects of ridicule among the moderns. Nor have they leſs derided the ſuppoſed predilection, that nature was believed to have for certain numbers, or for certain periodic forms, which, acording to their ideas, produce a regular recurrence of theſe numbers, in the phenomena of the univerſe. Many parts, too, of the Hippocratic phyſiology have not been more kindly treated; not excepting the doctrine of critical days, which, by their regular revolutions, reproduce the ſacred numbers of the Pythagoreans. It remains to be aſcertained, whether the opinions, in regard to theſe different points, have been all equally juſt.

When we conſider the progreſs, which the ancients had made in geometry, and ſtill more, when we reflect on the juſt and profound view which they took of the ſcience of numbers, we can ſcarcely doubt, that they muſt have made important diſcoveries with reſpect to their properties. The application of theſe diſcoveries to geometry, with which an arithmetic of ſome kind is neceſſarily connected, naturally occurred to their minds. From geometry, they might extend the employment of it, to various branches of phyſical ſcience; and we know, that they actually did this, witneſs the ſplendid atchievements of Archimedes in ſtatics and mechanics. Long before this, Pythagoras, with the aſſiſtance of the experimental analyſis, had been able to refer the vibrations of ſonorous bodies to the laws of calculation. To conclude; the activity of theſe enterpriſing minds, who took ſuch delight in generalization, muſt have led them to introduce, into moral ſcience, thoſe views or inſtruments of reſearch, which had aided them ſo powerfully in their other ſtudies. Suppoſing this conjecture to be as well founded, as it appears to be, we muſt allow, that their ſyſtem of numbers muſt have been to them, what the ſcience of algebra, which is only a more abſtract and univerſal ſpecies of arithmetic, is become, in many reſpects, to the moderns,—the univerſal method, and almoſt univerſal language of the ſciences. Like it, the numerical ſyſtem of the ancients, imperfect as it appears to have been, might have thrown a direct light upon many branches of reſearch, and might have ſerved as a ſtandard of compariſon, and regulator of the methods of others; it might have furniſhed them with means of correcting their errors, or pointed out to them the way to ſupply their defects.

No reaſoning *a priori* leads us to believe, that nature prefers one number to another. But this is a queſtion of matter of fact, which obſervation alone can ſolve. Suppoſe that, in a game of backgammon, fives were thrown twenty times running, the rational probability of their recurrence at the one-and-twentieth throw would be ſtill the ſame. Yet what player, in ſuch a caſe, would not bet with confidence againſt ſuch a return?

From experience alone we learn, that, in conſequence of the natural variety obſerved in fortuitous events, there is always reaſon to wager againſt thoſe which have already occurred frequently, and in favour of thoſe which have not yet taken place.—It is, therefore, from facts, and from facts alone, that we muſt judge of the doctrine of numbers. In thoſe phenomena, which appear to us the moſt irregular, and the leaſt capable of being ſubjected to rule, experience ſhews us, that there is ſtill a certain order obſerved. Why, then, may not the ancients have diſcovered, in different operations of nature, that order which numbers muſt follow, in order to produce their recurrence, at ſtated intervals? I am very far from affirming that ſuch an order really exiſts; but it may be the caſe, and the ancients may have obſerved it, and it does not appear to me, that we are entitled to contradict them flatly on this point, till we ſhall have made all the experiments that are required for a complete ſolution of the different queſtions relating to the doctrine, and till we ſhall have made them on a ſufficiently great ſcale, and for a ſufficient length of time, to remove all the difficulties on the ſubject.

With reſpect to the periodical order of the vital actions, whether in the formation and evolution of the different organs, or in the alterations of their functions, and in the criſes of diſeaſes, we are in poſſeſſion of a conſiderable collection of facts, which may enable us to form a more deciſive judgment. Hippocrates, Galen, Aretæus, and ſeveral others among the ancients; their abbreviators, Lommius, and Sennertus; their commentators, Duret, Jacot, Houlier, Proſper Martian; and their adherents, Baillou, Fernel, Rondelet, Proſper Alpini, Piquer, and ſeveral others, among the moderns; and laſtly, many obſervers of particular diſeaſes, whoſe authority poſſeſſes the more weight as to the accuracy of the facts, that they confined themſelves to a ſimple hiſtorical narration, and had no favourite ſyſtem to eſtabliſh; all theſe writers, I repeat, ſeem to have conſpired together, though with different objects in view, to confirm, in this branch of medical reſearch, the juſtneſs of the doctrine of numbers, as adopted by the ancients.

Aſſiſted by latter reſearches, Stahl not only adopted their opinions, but extended and enlarged them; and even applied them, in a more exact and comprehenſive manner, to the explanation of the phenomena of the living ſyſtem. In ſome particular treatiſes, he has combined them with ſeveral new and ingenious views reſpecting the periods, the progreſs, and the converſion of different diſeaſes, both acute and chronic. Hoffmann, who was of a more timid diſpoſition, has followed Stahl pretty cloſely, in many of his excellent diſſertations. Boerhaave himſelf was, in the end, obliged to acknowledge the accuracy of the ancients; and all the ſkilful practitioners of his ſchool have not heſitated to adopt this doctrine of critical days, which, at firſt, had been rejected, as abſurd, and in ſome meaſure cabaliſtical.—But I have already expatiated too much on this ſubject.

At a very early period, as we have before obſerved, Acron of Agrigentum had traced the outlines of the doctrines of the Empiric ſect; but their principles were not reduced to a regular ſyſtem, nor arranged in a didactic form. This taſk was reſerved for Serapion, the founder of the famous ſchool of Alexandria, which continued to flouriſh during a long courſe of years.

I have above remarked, that the controverſy between the Dogmatiſts and the Empirics, was a mere diſpute of words. The one party, however, conducted their proceedings according to certain rules and axioms, and occupied themſelves about remote and proximate cauſes of events; while the other confined themſelves ſolely to experience, and rejected all hypotheſis, as tending to weaken the force of obſervation. But the Empirics reaſoned from experience, and the Dogmatiſts experimented (if we may uſe the expreſſion) with reaſoning, and regarded as cauſes thoſe circumſtances, which the former had introduced into the hiſtory of the diſeaſe. Analogy and induction were to the Empirics, what the connection of their dogmas and their methodical application to the plans of cure were to the Dogmatiſts; but the former had the advantage of commencing the ſubject more directly. The name, even, which they bore, the terms which they employed, as well as the fundamental rules which they had preſcribed to themſelves, led them conſtantly back to the true road of analyſis, which ſhould always begin with obſervation.

If the Pneumatic ſect had not produced Aretæus, it would ſcarcely deſerve to be noticed. Some viſionary ſpeculators have, at different times, been deſirous to revive it: their efforts, however, have proved ineffectual: their reveries have left no traces behind them, and are now ſcarcely remembered.

Aretæus, even at the preſent time, is regarded as one of the moſt accurate obſervers, and as one of thoſe excellent deſcribers of diſeaſe, whoſe remarks will be always replete with inſtruction; although they date from the earlieſt ſtages of the art.

SECTION V.

From the Time of the Introduction of Medicine at Rome, to the Epoch of the Arabians.

Rome became the miſtreſs of the world. Her tyrannical government completed, by oppreſſion, the ruin of the nations, which ſhe had ſubdued by the reſiſtleſs force of her arms. She tranſported, with violence, to her boſom the arts and ſciences, or, rather, the maſterpieces they had produced; which ſhe ſnatched from others, without knowing how to appreciate and enjoy them herſelf. The riches of the whole univerſe were poured in, to glut her inſatiable avarice. Luxury ſoon followed in their train; and the aſtoniſhing productions of the happy ages of Greece had the effect of attracting, from all parts to Rome, the philoſophers, the men of letters, and the artiſts of that unhappy country, who could now find nowhere but in the capital of the world, thoſe objects which they required for the culture of their minds, and which were ſtill dear to their hearts.

Phyſicians were for a long time prohibited, by the magiſtrates, from ſettling at Rome. On this ſubject, there remains a letter of Cato the Cenſor, which is truly curious, on account of the ſtupid ferocity it breathes. That violent and prejudiced man thought to govern the poſſeſſors of the wealth of the univerſe, like a convent of monks, or as he managed his own houſehold. Parſimonious, cruel, and capricious, he is well known to have ruled over the latter with the moſt tyrannical ſway. In order to combine all ſorts of deſpotiſm, he himſelf aſſumed the care of his family and ſlaves when ſick; and the means which he employed for this purpoſe evince the moſt diſguſting ignorance, and moſt ridiculous ſuperſtition.

However, the manners of the people ſoon became more refined, by the immediate influence of the new ſources of enjoyment which wealth had opened. The neceſſity of procuring men of information, in every department of knowledge, was very generally felt, and phyſicians, at length, were allowed to appear.—Accordingly, they ſoon arrived in great numbers; but the era of their eſtabliſhment cannot be regarded as very glorious for their ſcience; * though Aſclepiades, ſoon after, conferred upon it a conſiderable degree of luſtre.

Practitioners ſeldom attract public notice, by purſuing a ſimple and regular line of conduct.

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* Caſſius Hemina, quoted by Pliny, ſays, that Archagatus was the firſt who introduced the art of medicine into Rome: that they at firſt allowed him a ſhop, with the title of *healer of wounds (vulnerarius)*; but that they ſoon changed this appellation to that of *executioner*, on account of the torments which his operations occaſioned.

duct. The human mind, in almoſt every ſituation, contracts particular habits, and, perhaps, has received from nature that diſpoſition which leads it to ſearch for the wonderful, and to embrace with eagerneſs whatever is marvellous and extraordinary. For engaging its attention, the ſimple truth proves often inſufficient: we muſt aſtoniſh, in order to convince; and tranſport the mind beyond the bounds of the viſible world, in order to obtain its aſſent[*]. Aſclepiades, educated as he was, in the ſchools of eloquence, and a rhetorician himſelf, introduced into phyſic the art of deluding the judgment by the power of the imagination. It is not very difficult to ſucceed in this art with the ſick, whoſe infirmities ſo often render them credulous and ſuperſtitious. Novel methods of cure, fanciful remedies, bold philoſophical views, far removed from common opinions, a rich and fertile vein of eloquence, and an inexhauſtible fund of indulgence for the caprices of thoſe who committed themſelves to his care; theſe were the means which this man employed, who, without being a real phyſician, was by no means deſtitute of talents and information.

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[*] This obſervation applies with moſt force to nations in a ſtate of ignorance; but gradually becomes leſs applicable, in proportion as they advance in civilization.

The corpuſcular philoſophy of Democritus, extended and improved by Epicurus, had been adopted and cultivated only by a ſmall number of perſons, and was regarded with a ſort of dread by minds of a timid caſt. It was, perhaps, on that very account, that Aſclepiades was ſo ſucceſsful in making it the baſis of his ſyſtem of medicine. By means of corpuſcules and pores, he explained every thing; he aſtoniſhed the people, and was ſometimes ſucceſsful in effecting a cure. He laughed at the ideas of Hippocrates, on the ſubject of critical days; he ridiculed his patience in obſerving nature, in order to aid her, or ſupply her wants; and termed his ſyſtem *a Meditation upon Death.*

The opinions and practice of Aſclepiades did not long ſurvive himſelf. From their remains, however, aroſe the Methodic ſyſtem of phyſic, the founder of which was Themiſon, at preſent leſs known by his doctrines, than by the line of Juvenal;

> "Quot Themiſon ægros autumno occiderit uno."

The Methodiſts divided diſeaſes into three claſſes: into thoſe of *conſtricted fibres*; into thoſe of *relaxed fibres*; and into thoſe which were called *mixed.* In the firſt, they employed laxatives; in the ſecond, they exhibited aſtringents; and in the laſt, both laxatives and aſtringents.

But, in the treatment of chronic complaints, they had recourſe to their grand remedy, which they termed the *analeptic*, or *reſumptive circle*, and which conſiſted of a ſucceſſion of fanciful remedies, applied at ſtated intervals, and in a determinate order.

We may form ſome idea of what they meant to deſignate by the term *diſeaſes of conſtriction;* though it certainly is not ſo intelligible to men of ſcience, as it appears to the uninformed claſs; we may alſo conceive the meaning of the phraſe *relaxed fibres*; but it is difficult to divine, what they could underſtand by their *mixed ſpecies*, or how they could apply to practice this ſpeculative notion, which is ſo very ſubtile, as to elude all clear conception. Beſides, is it not evident, that almoſt all diſeaſes belong to the *mixed* claſs, or may be referred to it? For this word (if it ſignify any thing) muſt mean an *inequality of tone* in the different organs, or an *irregular diſtribution* of the vital power*. Now the majority of diſeaſes preſent the general phenomenon of a derangement of equilibrium, or irregular expenditure of living energy. In thoſe caſes, in which theſe deviations from the healthy ſtandard are leſs obvious, an obſerving eye may ſtill perceive them; and, perhaps, there is no diſeaſe in which a deficiency of equilibrium is not in ſome degree manifeſted, whether it be in the tone of the different organs, or in the exerciſe of life, and diſtribution of the ſenſibility of the ſyſtem. Thus, then, the *mixed ſpecies* of the Methodic ſect, by comprehending every thing, becomes, in fact, applicable to nothing.

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* So that certain parts may be in a ſtate of *conſtriction*, while others are in a ſtate of *relaxation*.

With regard to the two other claſſes, though we ſhould not, perhaps, reject entirely the terms by which they are deſignated, yet the doctrine, which they tend to eſtabliſh, is certainly of a very limited application, and furniſhes very few ſure indications for practice.

Cælius Aurelianus, whoſe work contains much uſeful matter, has given us a detailed expoſition of the principles of the Methodic ſyſtem. He had adopted them, and employed them with ſkill; but had not been able to impart to them that character of practical truth and general utility, which they ſo eſſentially wanted.

Proſper Alpini, in the ſixteenth century, and Baglivi, in the eighteenth, endeavoured to revive this doctrine. They both conducted the attempt with genius, but without ſucceſs. Others have preſumed to attempt it, without the recommendation of genius: but the ſmall portion of ephemeral fame, which they acquired, generally terminated with their life, and their names ſcarcely deſerve to be recorded for theſe fruitleſs eſſays.

After ſeveral centuries, in which it made little progreſs, and after numberleſs commotions and errors, the ſcience of medicine ſtood greatly in want of more accurate methods of inquiry. It was high time for it to recur to the precepts of nature, or to thoſe of her faithful interpreter, Hippocrates.—Galen at length appeared.—Endowed with a genius ſufficiently comprehenſive, to embrace all the ſciences, and to cultivate them all with equal ſucceſs, he, even in early infancy, gave proofs of uncommon capacity; and while purſuing his youthful ſtudies, began to perceive the futility of the prevailing ſyſtems. Diſſatisfied with what his maſters taught him as incontrovertible truths, and as the immutable principles of the art, he read Hippocrates' works, and was ſtruck, as it were, with a new light. In comparing them with nature, his aſtoniſhment and admiration redoubled; and Hippocrates and nature thenceforth became the only preceptors, to whoſe inſtructions he would liſten. He undertook the taſk of commenting upon the writings of the Father of medicine; he preſented his opinions in various lights in which they had not been hitherto regarded; he repeated his obſervations; he extended them, and ſupported them with all the aid which philoſophy and natural ſcience are capable of affording them, either by the ſimple compariſon of facts, or by the collation of different theories,

ries, or, finally, by the combination of different methods of reaſoning. In ſhort, Galen revived the Hippocratic ſyſtem of medicine, and communicated to it a degree of luſtre which it did not poſſeſs in its primitive ſimplicity. But, at the ſame time, what it gained in his hands muſt be confeſſed to have more the appearance of dreſs and ornament, than of real ſolid acquiſition. The obſervations which had been collected, and the rules which had been traced by Hippocrates, in aſſuming a more ſplendid and ſyſtematic form, loſt much of their original purity. Nature, whom the Coan phyſician had always followed with ſo much accuracy and caution, became obſcured, and, in a manner, ſtifled, by the foreign pomp of different ſciences or dogmas; and the art of medicine, overcharged, as it was, with ſubtile or ſuperfluous rules, only entangled itſelf in a number of new and unneceſſary difficulties.

Bordeu compares Boerhaave to Aſclepiades; and may, indeed, have found ſome features of ſimilitude between theſe two celebrated phyſicians: but the character of Galen bears a much ſtronger reſemblance to that of the Leyden profeſſor. Both appropriated to themſelves the knowledge of the age in which they lived; and both endeavoured to apply it to medicine. In reforming the latter upon great and comprehenſive plans, they attempted to combine with it a variety of doctrines which are entirely foreign to it, or which, at moſt, bear to it relations of an inſulated and merely acceſſory nature. Both were deſirous to enrich their ſyſtems of phyſic with every thing which they knew beſides. Thence it comes, that while they ſimplified with method, though often in a very unequal manner, the general views which ſhould govern its ſyſtem of inſtruction, they have, nevertheleſs, left a great taſk for their ſucceſſors to accompliſh,—the taſk of ſeparating, with accuracy, many juſt and beautiful ideas, from the hypothetical dogmas that disfigure them, and which the order itſelf, of their connection, renders ſtill more dangerous for young ſtudents, too eaſily ſeduced, as they are, by ſuch comprehenſive views.

Galen was the phyſician of Marcus Aurelius. It is with a lively intereſt, that we peruſe, in his works, the account of ſome diſorders with which that philoſophic emperor was afflicted, whoſe life and writings preſent the happieſt model for the imitation of thoſe men, who hold in their hands the deſtiny of nations, and whoſe name, in every age, muſt be a ſatire upon all who have not followed his example.

SECTION VI.

Epoch of the Arabians.

FROM Galen to the time of the Arabians, medicine appears to have revolved in the circle of the opinions, which we have ſeen ſucceſſively prevail among the Greeks. Its condition during the continuance of the Eaſtern Empire is little worthy of attention. We might, perhaps, in this interval, find ſome obſervations worth collecting, with reſpect to the hoſpitals, which were at that time eſtabliſhed at Conſtantinople, and in ſeveral other cities of Greece in Europe and Aſia: but this ſubject has but a remote connection with that now under conſideration.

The Alexandrian library, which had been formed by the unremitted care of a long ſucceſſion of princes friendly to the cauſe of learning, was burnt during the war between Ceſar and Pompey. A violent inſurrection having taken place in the city, Ceſar ordered the ſhips that were in the harbour to be ſet on fire. The fire communicated on a ſudden to the buildings of the library; and not fewer than 400,000 volumes were conſumed by the flames.

However, this loſs was in a ſhort time replaced, at leaſt, as far as it could well be. Antony made a preſent to Cleopatra of the library of Pergamus, which contained 200,000 volumes. This ſtock was by degrees augmented: the books attracted men of letters, and the men of letters, on the other hand, created an influx of more books. In this manner, Alexandria became again the emporium of the ſciences and arts.

Medicine, in particular, was taught there with much ſucceſs. Students from all quarters of the globe reſorted to it, to receive the inſtructions of the moſt celebrated maſters in the world: and this ſchool, which had been founded in the happieſt ages of Greece, was ſtill enjoying an undiminiſhed degree of credit, when the conqueſt of Egypt by the Saracens took place.

Amrou, who commanded the expedition, was deſirous to ſave the library: The anſwer of Omar is well known. Thus a treaſure of incalculable value to the whole human race, periſhed through the barbarous fury of Muſſulmen.

Yet the proſcription was leſs general with reſpect to books of medicine, of natural hiſtory, and of natural philoſophy. Some few eſcaped deſtruction, either on account of the intereſt, which even the moſt ſtupid men take in the ſcience that promiſes them health, or an alleviation of their complaints; or, as ſome writers are of opinion, on account of the idea, which generally prevailed in the Eaſt, that they would learn from them the art of making gold*.

The firſt verſions of theſe books, that appeared, were in the Syriac language; for the Arabian tranſlations are of a later date. The works of Ariſtotle and Galen were thoſe for which the Arabians evinced the moſt enthuſiaſtic admiration. They tranſlated them with the greateſt care, and commented upon them in different ways, and with different views. Their ſubtile minds were admirably adapted for the Peripatetic ſyſtem of metaphyſics, and for that farrago of abſtract propoſitions, which bears down the ſmall number of juſt and ingenious views it contains. Their literati, who were as fond of pillage as their warriors, appropriated to themſelves the ideas that were to be found in works of little note; and ſometimes did not ſcruple to lay claim to whole books, only taking care to ſuppreſs the name of the author. Even their moſt celebrated writers are not altogether free from this reproach.

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* John the Grammarian was at that time reſiding at Alexandria, and made great, and not altogether unſucceſsful exertions, to ſave a few manuſcripts. Theodocus and Theodunus, both phyſicians of celebrity, were probably alſo in the city, when it fell into the hands of Amrou; at leaſt, there is reaſon to believe this from the relation of Abu-Oſſaiba, their biographer. Now, if this was the caſe, there can be no doubt, that they would uſe their utmoſt endeavours to ſave the moſt valuable remains of the art.

To the Arabians we are indebted for ſome important improvements in the art of preparing medicines. They introduced into practice the uſe of mild cathartics, or lenitives. And Rhazes, an Arabian phyſician, is the firſt who deſcribes the ſmall-pox*. The moderns, no doubt, have far ſurpaſſed him in the obſervation of the different characters it aſſumes, and of the appearances it exhibits, according to the age, the temperament, the ſtate of the body, and the epidemical conſtitution prevalent at the time when the diſeaſe occurs: but it is delineated with much accuracy in his writings; and till the time ſhall come, when the practice of inoculation (ſimplified as it has been, by the beautiful diſcovery of Jenner) ſhall have completely effaced it from the catalogue of diſeaſes, Rhazes and ſome other Arabians, who have treated of this diſorder, will continue to be read with much profit.

The works of Hippocrates were tranſlated into Arabic, at the ſame time with thoſe of Ariſtotle and of Galen. But his ſimplicity, his preciſion, his doctrines founded upon experience, that prudent philoſophy and rigid method, which obſerves with care the footſteps of nature, were far from exciting the ſame degree of enthuſiaſm, as the ſcientific pomp and impoſing luxuriancy of the two others. And indeed the Arabian ſyſtems of phyſic have always retained this caſt; for in them we look in vain for that genius, and that delicacy of diſcernment, which are to the ſcience of medicine, what taſte is to the polite arts.

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* See note [F].

If we regard merely the abſurdity of the enterpriſe, and the ſtupid ferocity which gave birth to it, the Cruſades were nothing more than a cruel and ſuperſtitious diſorder of barbarous times. But we muſt, at the ſame time, admit, that they became very powerful means of weakening, and diverting the force of feudal tyranny; and, above all, that they tended to enlarge the intercourſe between the ignorant Europeans, and the Saracens, who, at that time, were more enlightened. It alſo appears, that we are indebted to them for the firſt notion of the municipal ſyſtem of law. It was at Jeruſalem*, that a claſs of citizens ſuddenly emerged from amid the chriſtian armies, and that their chiefs, by conferring upon them different functions of the magiſtracy, were enabled, by their aid, to keep in ſubjection thoſe bands of turbulent nobles, who till then had known no authority.

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* See Gibbon on this period.

Beſides, the better informed part of theſe nobles, who returned to Europe, brought with them a number of new ideas. The flouriſhing aſpect, of the towns and palaces, inhabited and embelliſhed by the Arabian chiefs, and the luxury and conveniences which they exhibited, had naturally inſpired them with new deſires; and, either from this circumſtance, or from their connections with the Genoeſe and Venetian merchants, the Cruſaders began, firſt, to perceive the value of the arts, and, afterwards, that of the ſciences which elucidate them, or of the literature which enlivens them, which ſerves them for guide, and forms, as it were, their neceſſary accompaniment; and ſoon diffuſed a taſte for them through the Weſtern world.

The unfortunate remains of the Alexandrian ſchool, which had eſcaped the fury or rapacity of the Saracens, were collected by the emperors of the Eaſt. While the Arabians endeavoured to promote the advancement of ſcience in Aſia and Spain, Greece retained ſome faint traces of her former ſplendour. The ſcenes of ſo many glorious exploits, of ſo many ſeats of genius, and of the induſtry of its ancient inhabitants, were ſtill before their eyes. The firſt productions in the moſt beautiful language that ever was ſpoken were in the hands of every one; the monuments, of which the avarice of the Romans had not been able to deprive them, and thoſe, which the luxury of the emperors of Conſtantinople had raiſed at a vaſt expence, ſupplied their lively imaginations with ideas that favoured the developement of all the mental faculties: and if it had not been for the theological diſputes, which the folly of princes had kindled, their genius might have ſhone with a luſtre, at leaſt, as ſtrong as can be expected to emanate among a people that has loſt its liberty.

SECTION VII.

Introduction of Medicine into Europe from Greece, with Men of Learning, and with Literature.

AFTER the capture of Conſtantinople by the Turks, the men of letters, accompanied by their books, took refuge in Europe. Italy was near at hand; and the two countries continued to be united by ancient political, religious, or commercial relations. It was, accordingly, to Italy that theſe unfortunate fugitives retired, carrying along with them thoſe treaſures with which Europe was to be enriched,—thoſe valuable collections of Grecian works, which, till then, had been but very imperfectly known there, and which afterwards ſeconded ſo powerfully the reanimating impulſe, of which Italy had already experienced the firſt beneficial effects.

The works of the Arabians ſpread their fame through all the dominions of the Caliph; and the bordering nations began to look with envious eyes, upon thoſe favoured provinces. Commerce had eſtabliſhed ſome little intercourſe between them; and had created ſeveral new wants and deſires. In a ſhort time, the youth from all parts of Europe repaired to Spain, in order to enjoy, at the ſource itſelf, the benefits of this riſing light. The Arabian ſchools, accordingly, came into vogue, in the ſame way as the Grecian ſchools had done before them. Arabic ſoon became the language of the learned, and it was through it that the Europeans firſt became acquainted with the works of Hippocrates, of Galen, of Ariſtotle, of Euclid, and of Ptolemy. But the ſcience of medicine, amid this agitation of opinions, made no real progreſs.

However the Greeks, who had taken refuge in Italy, diſtributed copies of the books they had brought along with them; and taught and illuſtrated, in public lectures, the doctrines which were contained in them. In theſe conſiſted all their wealth: accordingly, they endeavoured to diffuſe a taſte for them, and to enhance their value as much as poſſible. Theodore

Gaza, Argyropylus, Laſcaris, and Beſſarion prepared correct editions of them; and Aldus printed them. The works of Dioſcorides appeared firſt; and after them thoſe of Galen, of Paulus Ægineta, and of Hippocrates. Their publication tended greatly to leſſen the credit of the Arabians, whoſe numerous plagiariſms were ſo very ſtriking, and whoſe inferiority, in every reſpect, ſoon began to be perceived. But the infatuation was too great and general, to be completely overcome. Ariſtotle and Galen, whoſe reputation was ſtill undiminiſhed, ſecured to Arabian literature a portion of that authority which it had uſurped in their names.

In vain had the ſchool of Salerno, which had been founded towards the middle of the ſeventh century,—in vain had it procured for the place of its eſtabliſhment, the name of *Civitas Hippocratica.* In vain had the works of Hippocrates himſelf been put into the hands of the men of ſcience in Europe, in their original form, and no longer in the diſguiſe of Arabian tranſlations and commentaries. The time of his celebrity among the moderns was not yet come; and for the revival of true medical ſcience it was, perhaps, neceſſary, that the round of error ſhould be firſt completed.

SECTION VIII.

Of the Jewiſh Phyſicians.

It was through the Jews, that the Europeans firſt learned the advantages which different countries may derive from commercial intercourſe, and were appriſed of the wealth which the agents of their reciprocal exchanges may acquire, by the exerciſe of this ſort of traffic. Forming a cloſe and diſtinct fraternity in all parts of the world, they naturally became the agents, the brokers, and the carriers of the other nations. The inſecurity of the ſeas and highways had led them to deviſe more eaſy and convenient methods for tranſporting money-ſecurities. They accordingly became our factors and bankers, before the uſe of reading was known: and they were alſo our firſt phyſicians. The Oriental languages were familiar to them, and at a time when Galen, Hippocrates, and the other fathers of medical ſcience, were known in Europe only through the medium of Arabic and Syriac tranſlations, the Jews were almoſt the only perſons, who, by taking advantage of the labours of antiquity, knew how to treat diſeaſes with any ſort of method.

Their theoretical opinions and general ſyſtems are detailed, at full length, by Riolan; but they are

re no longer deſerving of notice. Their practice,
owever, was more ſucceſsful. All the different
cts, which had ariſen among them, while they
xiſted as a united people, had combined the
udy of medicine with that of their religious
nets. We have already obſerved, that the Eſſenes
d θεραπευτάι were renowned for their ſkill in the
eatment of diſeaſes, and that the name of the
ter ſignifies *healers*. They even pretended to
rk miracles, and the ignorant claſs of this
ople (perhaps at that time the moſt ſtupid and
ſt fanatic of any nation in the world) were
en inflamed to ſuch a degree by theſe ſup-
ſed miracles, as to alarm the Phariſees, who
re the titular proprietors of the national worſhip.
It is believed, that the univerſity of Sora, which
s founded in Aſia by their Rabbins, dates its
gin from the 200th year of the chriſtian era.
e Jews migrated to Spain along with the Moors,
o reſembled them in many of their cuſtoms and
nions, and who receiving, as they did, conſi-
able aſſiſtance from them in ſupporting their
ies, naturally allowed them liberty to form
r different commercial and ſcientific inſtitu-
s.

he Jews had ſchools at Toledo, at Cordova, and
renada; and medicine was an object of parti-
r inſtruction in them. Huarte, in his "Trial of
s," affirms, that the Jews are the moſt proper

perſons for the exerciſe of the medical profeſſion. This people, mingling as they have done, with all the nations of the globe, have conſtantly, and in every ſituation, retained their original character. The authority of a legiſlature, that ſeparates them from the reſt of mankind, has ſtamped all their habits, and impreſſed even the features of their face with indelible traces; and the cruel and unceaſing perſecution, of which they were, eſpecially at that time, the victims in all parts of the world, has rendered this diſtinction more complete and irremoveable. Huarte ſays, that their temperament and character are preciſely thoſe moſt ſuitable for a phyſician. The ſubtilties by which he endeavours to ſupport his opinion, may not, perhaps, produce conviction; but one thing is certain—that in his time the moſt eſteemed, and, probably, alſo, the moſt able phyſicians were Jews.

It is well known, that Charlemagne placed great confidence in Farragut and Bengeſta, and that Charles the Bald entruſted the care of his health to Zedekias. Francis the Firſt was deſirous to have a phyſician of the ſame nation, and wrote to Charles the Vth, requeſting him to ſend him one from his court; but the perſon whom the latter recommended to him being ſuſpected of chriſtianity, he ordered him inſtantly to depart, without even deigning to conſult him on the ſubject of his complaint.

When the prieſts ſecured to themſelves the excluſive exerciſe of the medical art, in ſeveral of the Weſtern ſtates of Europe, as they had formerly done in Greece and Egypt, they intrigued with the Popes and Councils, in order to excite every ſpecies of perſecution againſt the Jewiſh phyſicians, whom they juſtly regarded as very dangerous rivals. They obtained formal excommunications againſt thoſe who committed themſelves to the care of Jews; and they prevailed upon weak princes to proſecute, with all the rigours of the law, ſuch of the latter as dared to poſſeſs knowledge, and to ſuccour their fellow-creatures. But theſe anathemas and prohibitions had no effect upon any but the common people, who were conſigned to the care of ignorant friars, canons, or deacons, and upon obſcure individuals among the Jews, who did not enjoy the protection of potentates, or of men of rank and influence.

In France, in particular, the prieſts were ſucceſsful in their endeavours to become the abſolute maſters of the medical profeſſion. They, among other things, enjoined celibacy to all thoſe who exerciſed it. Accordingly, the phyſicians finding no longer any advantage in remaining free, were induced to enter into orders, which held out to them the proſpect of rich benefices, prebends, abbeys, and even biſhopricks. Thus Fulbert, Biſhop of Chartres; Lombard, Biſhop of Paris;

ſeveral monks, ſuch as Rigord, author of the Life of Philip Auguſtus, and Obizo, Abbot of St. Victor, and phyſician of Louis the Big; laſtly, ſeveral prebendaries, as Robert of Douay, phyſician to Margaret of Provence; and ſeveral inferior and untitled eccleſiaſtics, as Roger of Provins, phyſician to Louis the VIIIth, all united the profeſſion of medicine with the prieſthood, and acquired, by theſe means, great wealth and repute. The Lateran Council, held in 1123, cenſured, in very ſevere terms, this ſpecies of amphibious beings*, who diſgraced both profeſſions by their avarice, their impoſtures, and their ſcandalous lives. But the French prieſts and monks bade defiance to its thundering anathemas: and it was not till three hundred years after, that common ſenſe, and a regard to propriety and the public good, triumphed finally over their artifices. A ſpecial bull, procured by the Cardinal d'Eſtouteville, which permitted phyſicians to marry, effected their complete ſeparation from the clergy, and by this means alone, put a ſtop to a great variety of ſhameful abuſes.

From that time forward, the Jewiſh phyſicians were leſs ſubject to perſecution: they were allowed to ſettle in conſiderable numbers, in France, in the Netherlands, in Holland, Germany, and Poland; and they every where acquired an aſcendency over the other phyſicians, which was too uniform to be aſcribed to any thing but real talents.

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* They alſo practiſed as lawyers, in which capacity their extortions were equally infamous.

At preſent there exiſts ſcarcely any memorials of this great ſucceſs in practice: the views and obſervations of ſo many men, who were held in the higheſt eſtimation by their cotemporaries, now repoſe along with them in their tombs: We learn that they cured diſeaſes; but the particulars of their exertions are unknown to poſterity, and have been loſt to the progreſs of the art.

SECTION IX.

Of the Firſt Sect of Chemical Phyſicians.

THE ſcience of chemiſtry, as well as medicine, had been introduced into Europe by the Arabians, who, having been long converſant with the art of diſtillation, had ſubjected various ſimples to chemical proceſſes, and had produced ſeveral new and uſeful remedies in their laboratories. Their chemical theories, crude and undigeſted, were promulgated in Europe, along with their tranſlations of the Greek authors. The operations, by which bodies are decompoſed and reduced to their elementary principles, and which enable us to recompound the ſame bodies, by the reunion of their ſcattered elements, or produce, by means of new combinations, other ſubſtances, endowed with properties to which we find nothing analogous in nature:—Theſe operations, ſo aſtoniſhing in themſelves, were calculated to fill with ſtupid wonder a ſet of ignorant minds, whoſe ideas formed, as it were, but an aſſemblage of errors. The early chemiſts, accordingly, were regarded as ſorcerers, and were obliged to exert great caution and addreſs, in order to avoid being torn in pieces by the people. But, at laſt, the principle of curioſity, the thirſt of the gold, which they expected to make, and the love of life, which they hoped to prolong by the products of this new art, triumphed over the terrors of hell, from which they believed it aroſe. Deceitful hopes, couched in the obſcure language of the prevailing ſuperſtitions of the time, allured thoſe who were endowed with ardent minds; and the maſs of abſurd fictions, which they already poſſeſſed, ſeemed inſufficient to exhauſt and ſatiate their credulity. In times, indeed, when knowledge is much more generally diffuſed, we may obſerve this principle to be continually in queſt of new objects: the diſcovery of error appears to be a painful feeling to the human mind, for which it endeavours to conſole itſelf by ſearching for freſh illuſions.

Accordingly, they flattered themſelves with the hope of being able to make gold, to cure all diſeaſes by a ſingle remedy, and to render man immortal. It was by purſuing theſe chimeras, that the chemiſts of Europe made their firſt diſcoveries, and that ſeveral men of ſuperior genius, in other reſpects, extended and improved them. Such, too, were the firſt ſteps of a ſcience, which now, after having paſſed through the hands of ſome genuine philoſophers, is arrived at that degree of accuracy in its operations, which muſt henceforth preſerve it in the ſure road of advancement ;—a ſcience truly ſublime in the objects of its reſearches, and in the univerſality of its methods, and which is, at once, the general key to all the branches of natural knowledge, the true guide of the arts, and the moſt formidable barrier againſt thoſe very ſuperſtitions, in the midſt of which it originated among us.

It is a remarkable circumſtance, that thoſe among the alchemiſts, who were moſt infatuated with theſe abſurd expectations, poſſeſſed, however, ſome ſound ideas, or, rather, ſome happy views with regard to the ſcience of medicine. At a time, when the ſchools were every day becoming more and more imbued with the ſcientific prejudices of the Galenian and Peripatetic ſyſtems of phyſic, the alchemiſts, urged on by their enterpriſing genius, and ſtimulated by the predilection which they felt for extraordinary ideas, and for new and untrodden paths of purſuit, began to form a juſt conception of the principles of the animal economy. They ſoon perceived, that it was neceſſary to ſeparate its ſtudy from that of dead matter, and that the beings, who are endowed with life and ſenſation, are ſubjected to different laws from thoſe which govern inanimate objects. Arnauld of Villanova, Raymond Lulle, Iſaac le Hollandois, and Paracelſus, may all be ſaid to have been treading in the path of the Hippocratic ſyſtem. Paracelſus, whom the ſolitary practitioner, cited by Bordeu, calls the greateſt fool of phyſicians, and the greateſt phyſician of fools, was unqueſtionably the prototype of mountebanks—a perfect pattern of pride, madneſs, and impudence. From the obſcurity of the alehouſes of Baſle, he practiſed upon the credulity of princes, and even of ſome men who were, in other reſpects, very enlightened for their age. Leaving theſe diſgraceful haunts, and attended by a multitude of infatuated adherents, he poured forth a volley of lies, abſurdities, and abuſe againſt his rivals. He proſcribed every thing which was not his—he cried with a frantic voice, "Away with Greek, Latin, Arabian!" and he publicly burnt the works, the fame of which he was deſirous to deſtroy.

Such was Paracelſus, who fancied himſelf a great man, becauſe his name was oftener mentioned in all parts of Europe, than that of any of his cotemporaries. Since that time, the ſevereſt juſtice has ſucceeded this infatuation, and there is not a ſingle phyſician, whoſe opinion is allowed to have any weight, who has not perceived the inconſiſtency of his ideas, and the extravagance of his pretenſions. How often have all the odious and ridiculous features in his conduct been expoſed and detailed! And yet, juſtice compels us to acknowledge the real ſervices which he rendered to ſcience; the utility of the remedies which he firſt introduced into practice, or which he employed with more boldneſs and ſucceſs than his predeceſſors; and that peculiar ſort of ſagacity he poſſeſſed, which, without meriting the name of real genius, prepares the mind for certain diſcoveries, to which a more cautious mode of procedure never could have led.

Paracelſus had perceived the principal errors of the prevailing ſyſtems of phyſic, and had ſome diſtant idea of the reforms which they required; and if his natural diſpoſition had allowed him to do juſtice to thoſe whom he impudently copied, while he was abuſing and reviling them; if he had not been conſtantly obliged to work upon the paſſions of the multitude which ſurrounded him, he, no doubt, would have been able to promote to a great degree, that revolution which was deſtined, ſooner or later, to effect the revival of the true ſcience of medicine in Europe.

SECTION X.

Revival of Learning and the Hippocratic Syſtem of Medicine.

Before the capture of Conſtantinople, the trade and manufactures of ſome towns in Italy, had revived, in that country ſo favoured by nature, a taſte for ſcience, for literature and the arts. The Italian language, formed as it was from the remains of the Latin, and on which ſo many hordes of barbarians had left the traces of their progreſs and oppreſſive dominion, had at length aſſumed a more ſettled character. Some original, and even elegant writers in it, began to imitate the claſſical beauties of which the ancients have left us ſuch tranſcendent models. It was found to be ſuſceptible alſo of other beauties, of a leſs ſimple nature, but which ſeem to be inherent to it, and which a captious taſte alone would wiſh entirely to proſcribe.

Italy ſerved as an aſylum for thoſe men of letters who had fled from Conſtantinople; and was the firſt to experience the happy effects of the knowledge they had brought with them.—Ancient literature ſoon became generally diffuſed throughout the country, and taſte made rapid progreſs, owing to the influence of a genial climate and the moſt enchanting ſcenery in the world, or to the preſence of many of the maſterpieces of art, which had been tranſmitted from the happy ages of antiquity; or, finally, to the progreſſive impulſe of induſtry and commerce, and the encouragement which ſome enlightened governments gave to men of learning and of ſcience.

The Italian had already become a rich and harmonious language. It was now ſuddenly brought to the higheſt pitch of refinement, in the ſame way as all the languages of modern Europe have been improved,—by the attentive ſtudy of the great models of antiquity: and the conflux of all the learned men of Europe to Italy, bore ſome faint reſemblance to thoſe brilliant periods in Grecian ſtory, when it was cuſtomary to ſee all thoſe among the neighbouring nations, and even among the conquerors of the world, who had learnt to know of how little value human life is without the luſtre of talents, and, above all; without the light of reaſon—when it was cuſtomary to ſee theſe men repairing from all quarters, and mixing with the diſciples of the celebrated philoſophers and orators of the times.

Among the patrons of learning and the promoters of knowledge, there are none whoſe memory has been more honoured by poſterity, than a family of Florentine bankers. The Medici, indeed, have done more for the advancement of philoſophy, of literature, and the arts, and conſequently for the happineſs of ſucceeding ages, than all the princes and kings of the earth put together. Highly reſpected, as long as they were ſatisfied with the noble and liberal exerciſe of their trade, and did not aſpire to any other ſpecies of influence than that derived from the popularity which they acquired by their talents and their virtues, they have left immortal teſtimonies of their worth, and have impreſſed with a deep ſenſe of gratitude the hearts of all the friends of philoſophy, of literature, and the arts: and the merit of having ſo powerfully contributed to the progreſs of the human mind, ought, perhaps, to outweigh the reproaches which, in other reſpects, they have too juſtly deſerved.

The two greateſt men among the Medici, were unqueſtionably Coſmo and Lorenzo.—The glory of Coſmo is more pure; but the career of Lorenzo was more ſplendid; and even the moſt rigid judges are forced to allow him the praiſe of brilliant and noble qualities. Who, indeed, was ever found to combine, in a more eminent degree, the ſincere love of his country, with great political talents, and the elevated ſentiments of a generous mind, with that ſkill and addreſs which enabled him always to preſerve his popularity? Yet, it was only by the moſt fortunate accident, that he eſcaped from a plot of aſſaſſination, in which a pope, a cardinal, and an archbiſhop, were concerned, and the execution of which no one could be prevailed upon to undertake but two prieſts; for common ruffians ſhuddered with horror at the idea of committing ſo great a crime in the church, and during divine ſervice*.

Lorenzo de'Medici was not only a warm patron of philoſophy, of literature, and the arts; but he alſo contributed by his own writings, to the diffuſion of that ſublime and liberal ſyſtem of morality of the Platoniſts, which, though unfortunately founded on principles that will not bear the ſtrict teſt of reaſon, has, at leaſt, the recommendation of inſpiring the mind with ſentiments of conſcious dignity.

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* "Diſſe (Monteſicco) che gli non baſtarebbe mai l'animo, commettere tanto ecceſo *in chieſa*, ed accompagnare tradimento col ſacrilegio."

Mach. lib. 8.

For further details, ſee The Life of Lorenzo de'Medici, by Roſcoe.

The poems of Lorenzo alſo deſerve to be ranked among the benefits which he conferred upon learning. Although not free from the blemiſhes of his age and country, they are diſtinguiſhed by a tincture of melancholy, and grandeur of conception, which we ſhould be glad to meet with more frequently in the works of the Italian poets.

The writings of Hippocrates were now pretty generally known, and were taught, illuſtrated and commented upon, along with thoſe of Plato. Phyſicians cultivated literature, and men of letters were in general phyſicians. In vain did Petrarch, jealous of the repute which the riſing art began to enjoy, utter the moſt violent invectives againſt it and againſt all its votaries: neceſſity, which is much more powerful than hatred, ſoon ſuppreſſed the outcry of this poet, and of ſome other wits, who had been at great pains to collect from the ſacred as well as profane authors, every thing which could injure the cauſe of medicine, and tend to degrade it in the public opinion.

The ſudden appearance of the venereal diſeaſe, which had commenced its ravages at the ſiege of Naples, in 1494[*], and which rapidly ſpread over Italy, France, Spain, &c. had rendered the aſſiſtance of the art more indiſpenſably neceſſary, and conſequently had conferred upon it a greater degree of importance. The anatomical diſcoveries of Veſalius and Columbus; the practical ſucceſs of Berengar of Carpi, and the claſſical labours of Mercurialis, Capivacci, Calvus, and Proſper Martian, had procured it a degree of credit in Italy, little inferior to what it had acquired during its moſt flouriſhing period among the Greeks: and the human mind, freed from the ſhackles, which had ſtinted and diſtorted its exertions, and after having exhauſted, if we may uſe the expreſſion, its taſte, upon the arts of rhetoric, poetry, painting, and ſculpture, began to ſeek new food for its activity, among the different branches of natural and moral ſcience.

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[*] See note [G].

While the Italian tongue made ſuch rapid improvement, the French and the other European languages, were in a very languiſhing ſtate, and, indeed, were daily becoming more and more diſfigured by the fragments of the Greek and Roman idioms, with which they endeavoured to conceal their poverty.

Medicine advanced with more equal ſteps; and in Italy, France, and Germany, made nearly ſimilar progreſs. The ſchools began to aſſume a new character: that of Paris, in particular, diſtinguiſhed itſelf by the moſt complete and ſucceſsful revival of the Hippocratic ſyſtem; and perhaps the beſt commentators upon this great man have been produced in this ſchool. I ſhall content myſelf with mentioning, in this place, Jacot, Duret, Houlier, and Baillou, the peruſal of whoſe works will always be inſtructive for practitioners. This ſame ſchool, too, had the honour of educating and poſſeſſing Fernelius, whoſe comprehenſive mind was able to reduce to a regular ſyſtem the moſt extenſive knowledge, and to communicate it in a ſtyle which was at once extremely philoſophical and elegant. About the ſame period, Fabricius of Acquapendente among the Italians, Fabricius Hildanus in Germany, and Ambroſe Paré in France, reformed, in ſome meaſure, the art of ſurgery. The two laſt enriched it with very accurate and circumſtantial deſcriptions of diſeaſes and their methods of cure. The former, collecting thoſe which already exiſted, arranged and combined them in a ſyſtematic form: while, on the other hand, Guy de Chauliac gave a correct view of the ſtate of ſurgery in his time, and, in particular, of the four Sects into which the whole body of practitioners were divided *.

However, the intercourſe between the different

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* The firſt of theſe ſects followed Roland, Roger, and the Four Maſters *; the ſecond were adherents of Brunus and Theodoric; the third, of William of Saliceto and Lanfranchi; and the fourth conſiſted of the German ſurgeons, who to their bandages, ointments, and potions, added the uſe of charms.

* See note [H].

nations of the globe, which was daily becoming more eaſy and habitual, redoubled, in ſome meaſure, the emulation of men of ſcience, and produced an extenſive diffuſion of learning. The diſcoveries which were made in one country began to be no longer unknown to its neighbours. Voyages and travels were multiplied, and, by their means, each celebrated profeſſor, from his chair, or from the privacy of his ſtudy, ſpoke, if we may ſay ſo, to the whole civilized world.

Linacre went to Italy to procure the knowledge, which, at that time, there were not the means of obtaining in England. He became the diſciple of Demetrius and of Angelo Politian, and lived in the ſtricteſt intimacy with that aſſemblage of men of learning, whoſe fame had induced him to quit his native country: and when he came back to England ſome years afterwards, loaded with the moſt honourable ſpoils, his return was diſtinguiſhed by a marked public ſervice. Linacre prevailed upon King Henry the VIIIth, to whom he was principal phyſician, to found the College of Phyſicians of London;—a reſpectable inſtitution, which, even at the time of its eſtabliſhment, was productive of real benefit, and has ſince continued to increaſe in ſplendour and utility. Linacre was Preſident of it at its opening, and exerted his utmoſt endeavours to promote its welfare; and, in order to aſſociate his name ſtill more cloſely with the advantages which he expected to accrue from it to his country and to the art, he bequeathed his own houſe to the College, with the intention, that it ſhould continue to be the place of its meetings, and the ſcene of all its labours.

SECTION XI.

Of Stahl and Van Helmont.

During the laſt century, chemiſtry experienced a ſudden revolution in Germany. This change, which had an aſtoniſhing influence upon the progreſs of natural ſcience, was effected by Becher, and his diſciple Stahl.—Stahl was one of thoſe extraordinary men, whom nature ſeems to produce, from time to time, for the purpoſe of effecting the reform of the ſciences. She had endowed him with that keen ſagacity, which enables the mind to inveſtigate thoroughly the objects of reſearch, and with that prudence, which leads it to pauſe, at every ſtep, in order to conſider them in all their different aſpects; with that quickneſs of apprehenſion and comprehenſiveneſs of underſtanding, which embraces them in their combinations; and with that patience in obſervation,

vation, which follows them through all their minute details. He was, like his maſter, chiefly diſtinguiſhed by the rare talent of tracing analogies and points of compariſon, between the moſt ordinary phenomena, and thoſe which appear moſt unaccountable; by the aid of which it is frequently poſſible to diſcover the immediate cauſe of the latter, and thus to found the moſt ſublime theories upon the moſt ſimple reaſonings. It would be foreign to our object to enumerate the chemical labours of theſe two great men: it may ſuffice to obſerve, that they were the firſt who introduced philoſophy into a ſcience, which, till then, had been conſtantly fluctuating between a ſmall number of important truths, and a multitude of abſurd errors, and which, from the very nature of its reſearches, ſeemed deſtined to remain for a long time the inheritance of quackery, or the deceitful object of the moſt extravagant hopes.

Stahl undertook to accompliſh in medicine, what he had before effected in chemiſtry. He had been educated in the doctrines of Hippocrates, and none knew better than he, the improvements they were capable of deriving from the obſervations and philoſophical views of the moderns. He perceived, that the firſt thing to be done, was to ſeparate the general ideas, or principles of medical ſcience, from all extraneous hypotheſis. He had remarked, that, as medicine employs itſelf upon a ſubject governed by particular laws, the ſtudy of no other object of nature is capable of diſcloſing, at leaſt directly, thoſe laws; and that the application of the doctrines which have been moſt firmly eſtabliſhed in other branches of ſcience, to that which has in view the knowledge and due regulation of the animal economy, neceſſarily becomes the ſource of the moſt pernicious errors.

Every age has its peculiar taſte and faſhion. The ſame ſciences are ſeldom cultivated, for a great length of time, with the ſame degree of ardour: they give way to others: and all of them, during theſe tranſitions, experience changes, more or leſs favourable to the improvement of their ſyſtematic arrangement. At different periods, medicine has aſſumed the tone of the prevailing ſciences: it has even endeavoured to ſpeak their language, and to ſubject itſelf to the ſame rules: ſo that it has paſſed ſucceſſively through all the different ſyſtems, that have acquired any degree of celebrity in the world. The neceſſity of confining it within the ſphere of thoſe facts, with which it is ſtrictly connected, and which alone can afford juſt views with reſpect to the human frame in a ſtate of diſeaſe, and uſeful indications of cure; this neceſſity, which had been formerly recogniſed by Hippocrates, had been alſo diſtinctly perceived by Bacon. Stahl accompliſhed, at leaſt in ſome reſpects, what Bacon had merely pointed out.

The ideas of Stahl have, in general, been very imperfectly underſtood: We may even aſſert, that they have been almoſt equally disfigured by his cenſurers and by his admirers. The cauſes of this miſunderſtanding deſerve to be detailed in a particular work. It would, I think, be uſeful to exhibit the Stahlian ſyſtem, in more determinate points of view, than the author himſelf could poſſibly have done. Hitherto the points, in which it is diſtinguiſhed from the doctrines of the ancients, and thoſe, in which it is related to them, have never been preciſely aſcertained. Perhaps too, it would be adviſable to conclude a work of this deſcription by a ſyſtematic view of the progreſs of the ſcience ſince the time of Stahl, and of the future advances which we have every reaſon to expect at no very diſtant period. It would probably reſult from this inveſtigation, that the reforms, which have been already effected, and thoſe which may be hereafter accompliſhed in the ſame ſpirit, muſt be aſcribed, in a great meaſure, to this extraordinary man; both on account of the ſound ideas which he directly eſtabliſhed, and of the impulſe which he communicated to public opinion. It would too, I am perſuaded, appear, that, notwithſtanding the haughty manner in which the adverſaries of Stahl have attacked him; notwithſtanding the awkwardneſs in which ſome of his diſciples have defended, explained, and commented upon his works, ſtill his influence has not been leſs powerful in medicine, than in chemiſtry, and that to both ſciences he has rendered everlaſting ſervices. In this place I ſhall content myſelf with obſerving, that even his ſmalleſt performances are replete with enlarged views, and, at the ſame time, abound in valuable minute remarks; and that the great work, which contains the expoſition of his general theory, is liable to erroneous interpretations, merely from the indefinite meaning of a leading term, which ſheds its obſcurity over all the acceſſory and ſubordinate illuſtrations;—an obſcurity, however, in which the author deemed it prudent to envelope his doctrines, in order to ſhield himſelf from perſecution.

The phenomena of life depend upon a cauſe; or, to ſpeak more correctly, are the reſult or natural conſequence of ſome preceding event, which we know only by the ſubſequent events connected with it, that is, by the phenomena themſelves. To this cauſe different names have been applied, at different periods of medical and philoſophical hiſtory. Hippocrates called it the *impulſive principle*, ἐνορμῶν. Since his time, it has received ſucceſſively the appellations of *ſoul* or *anima*, *ner-*

vous power, *ſenſibility*, *vital principle*, *ſolidum vivum*, *&c.*

When the diſtinction between mind and matter was eſtabliſhed in a formal and dogmatic manner, what had formerly been the *ſoul*, now became the *mind;* and philoſophers, in league with the theologiſts, regarded it as immaterial. The *body*, therefore, was diſtinguiſhed from it, by the circumſtance of its being body; and in order to explain the functions of the different organs, they adopted, according to the opinions of the age or country, various cauſes or powers, which they believed to be material as well as the body, but ſubjected by unknown relations to the mind, their common regulator. Certain notions of a ſtill more dogmatical nature having led to the opinion, that thought is excluſively a function of the mind, eſſential even to its exiſtence, and of which the exerciſe continues, without interruption, during the whole courſe of life, and terminates only at the diſſolution of the body; the word *ſoul*, conſequently, could no longer be reſtricted to the deſignation of the firſt cauſe, or abſtract idea of the phenomena of life; but was uſed to expreſs the principle of thought, or thought itſelf, and, in ordinary language, was employed to denote the moral being, or the whole aſſemblage of our ideas and ſentiments.

From among all the terms which ſeemed fit to expreſs the moving principle of animated bodies, Stahl choſe the word *ſoul*; and for the following reaſon: According to him, this principle is indiviſible, and exerts an equal influence upon all the organs of the body; and the differences, which are obſervable in their operations, or in the reſults of theſe operations, depend on the ſtructure of the parts, which modifies, in ſome meaſure, the principle itſelf, and cauſes it to experience the affections, or to produce the actions, peculiar to each of theſe organs. Thus, it digeſts in the ſtomach, breathes in the lungs, ſecretes the bile in the liver, thinks in the head, or principal dependencies of the brain. Such was the doctrine of many ancient philoſophers; ſuch, too, was the opinion of ſome of the firſt fathers of the church, and particularly of St. Auguſtine, who has delivered it, in a manner both clear and ingenious, in his ſhort treatiſe, " *De quantitate animæ.*" By this doctrine, they did not attempt to explain the nature and primary eſſence of the living principle, which is completely inexplicable: but they were freed by it from the inconvenience of being obliged to reſort to the double or triple *ſoul* of the Platoniſts: and as, upon the ſuppoſition of its immateriality, its action upon the body, with regard to all the movements which thought and volition produce, has never been called in queſtion,

tion, it was not more difficult to conceive, that it acted in like manner upon it, with reſpect to all the functions where thought and volition are not concerned; and *that*, too, according to the laws, which, in St. Auguſtine's opinion, are eſſential to the union of mind and matter, or what he believed to conſtitute living man. But the ignorance or duplicity of modern ſchoolmen made them refuſe their conſent to the diſcuſſion of opinions, which they themſelves held, but which they did not underſtand: and they found, and, perhaps, will long continue to find it more convenient to iſſue anathemas, and to perſecute.

If Stahl, then, had made uſe of any other term than that of *ſoul*, to which he carefully avoided attaching too preciſe a meaning, he would have found it difficult to eſcape the reproaches of impiety and materialiſm, and, what is ſtill worſe, the implacable fury of perſecutors, who at that time formed a very powerful party. A ſingle word was ſufficient to preſerve to him the reputation of orthodoxy, and to ſecure his tranquillity. This conſideration muſt appear a ſufficient apology for that ambiguity of expreſſion, which pervades his writings; although it may have become the cauſe of many theoretical blunders, and even of ſeveral practical errors, into which ſome enthuſiaſtic admirers of Stahl have fallen: and although it was very eaſy to prove, that the unity of the vital principle is equally conſiſtent with all the various ideas we can form of its nature, it appears that Stahl did not place great reliance on the ſound reaſoning, or on the candour of the theologiſts of his age.

In order to do juſtice to the views of Stahl, the greateſt man of his profeſſion, who has appeared ſince the time of Hippocrates, it would be neceſſary, I repeat, to enter into a detailed expoſition, not only of his general principles, but alſo of a great number of particular ideas, which ſerve to illuſtrate and confirm them.—Some perſons, who judge upon the word of others, without reading for themſelves, and others, who judge in the ſame way, even after having read, regard him merely as the author of theories, which captivate the imagination, but from which no real practical advantages can be derived. From my own experience, on the contrary, I am convinced, that there is no writer more capable of teaching the true method of obſerving nature, and of ſuggeſting happy expedients at the bedſide of the patient. His theory of the chronic affections of the abdomen, confined within thoſe limits, beyond which the author does not appear to have been deſirous to extend it, is ſuſceptible of the moſt frequent and general application; and his treatiſe On Hemorrhages is, without exception,

ception, the moſt valuable production, in practical medicine, of which modern times can boaſt.

After having ſpoken of Stahl, it is incumbent upon us to make ſome mention of Van Helmont. Not, that Van Helmont is at all deſerving of being ranked with Stahl; for, in no reſpect, can he be compared to him: but becauſe both of them have, with unequal powers, and by different paths, arrived at reſults, nearly ſimilar, and differing, perhaps, only in the language in which they are expreſſed. Their opinions, too, have been developed and connected together, by men of genius, whoſe judgment, having ſufficient firmneſs to brave the tyranny of prevailing opinions, has reſcued theſe two original characters from the oblivion that ſeemed to await them. It is in this ſtate of alliance, if we may ſay ſo, that their theories have reappeared in our ſchools. It is from the pens of theſe diſtinguiſhed writers, that they have acquired, at leaſt in this country, a degree of renown, which has contributed not a little to the real advancement of the art.

Van Helmont had ſpent his youth in ſtudying the works of the adepts. Endowed by nature with a glowing imagination, he increaſed its ardour by his acquaintance with them; and the fire of their furnaces had the effect of completely inflaming his mind. Yet, amid the tarniſh of alchemy and ſuperſtition, by which his ideas are too often obſcured, vivid gleams of light are at times obſerved to appear. It was in purſuing the path of error, that he made ſeveral fortunate diſcoveries, and it was in the language of quackery, that he announced the ſublimeſt truths.

Van Helmont was one of the moſt inveterate opponents of the Galenian ſyſtem, and of the ſchools that were moſt in vogue in his time. He, indeed, allows no opportunity of attacking the latter to eſcape him; and he frequently combats them with great juſtneſs and diſcernment. Nothing, certainly, could be more unlike his ſyſtem of phyſic, than that which was then generally taught; but the circumſtance of thinking differently from the reſt of mankind is not always a ſure criterion of thinking rightly.

Van Helmont has the merit of being the firſt who demonſtrated the influence which the epigaſtric organs exert upon the reſt of the ſyſtem. Some obſcure hints of this influence, were, no doubt, to be found in Hippocrates; but the latter appears to have noticed it merely for the purpoſe of obſerving the narrow limits within which he ſuppoſed it to be confined. No one, after his time, ſeems to have paid particular attention to the ſubject, till Van Helmont perceived the potent action of the ſtomach upon the other organs of the body, and that of the digeſtive power upon their reſpective functions. He remarked, too, that the diaphragm, which is placed both as a partition and means of communication between the thorax and abdomen, becomes, in conſequence of its connections with other parts, and the vicinity of ſome of the moſt important viſcera, a principal centre of action in the economy of the living ſyſtem.

Numberleſs facts may be adduced in ſupport of this opinion. The phyſicians of the Montpellier ſchool have collected thoſe that are moſt ſtriking, and have illuſtrated them in different works, with much more method and perſpicuity, than Van Helmont ever could have done.

Each organ has a ſenſibility peculiar to itſelf, although cloſely connected with, and ſubordinate to that of the whole ſyſtem: particular properties ſerve to diſtinguiſh it from all the other organs; and certain functions are excluſively aſcribed to it. Van Helmont ſuppoſed, that the characteriſtic diſtinctions of the different parts of the body, depend upon the cauſes that animate them, and believed, that in each organ there reſided a principle, charged with its government; that a ſuperior principle, to which the author gave the name of *Archæus*, has the ſuperintendence of all the reſt; and that, from their concurrence and ſyſtematic combination, the general principle of life reſults, in the ſame way as the body itſelf is formed by the union of all the members. The great *Archæus* is ſuppoſed to reſide at the ſuperior orifice of the ſtomach; whence, as it were from his throne, he iſſues his orders to the inferior *archæi*, according to their different juriſdictions. The latter, though obliged to obey even the caprices of the former, take care always to add ſomething of their own, either good or bad; and it is in all theſe operations combined, that the regular actions of the healthy ſtate, and the anomalous appearances of diſeaſe conſiſt.

The art of medicine, then, according to the above theory, conſiſts in the faithful ſtudy of the character of the common central principle, and of the nature of the other inferior principles; in knowing when to rouſe their induſtry, or repreſs their rage; and what are the proper means of governing their paſſions, or correcting their miſtakes.—All this tranſlated into common language implies, that, in animated bodies, there exiſts a general cauſe of the operations of life; that the different organs, though conſtantly dependent upon this cauſe, have, nevertheleſs, certain modes of being affected, and of acting peculiar to themſelves, which are the neceſſary conſequence of their particular ſtructure; that the object of medicine is, to trace the laws by which this cauſe is governed; to determine the modifications which it undergoes in different parts of the ſyſtem, and in different circumſtances; and to aſcertain the means of operating, both upon the whole ſyſtem in general, and upon any organ in particular, in order to preſerve or re-eſtabliſh the regularity of its functions.

This doctrine is confirmed by the obſervation of nature. It was upon it, too, that Van Helmont grounded his practical views. Unfortunately, he fancied that genius could ſupply the place of obſervation, and rejecting with diſdain the facts which had been collected by his predeceſſors, he boldly adopted plans of treatment that were entirely novel. After the example of Paracelſus, he aimed at the prolongation of human life; he flattered himſelf that he had diſcovered the ſecret, and proclaimed it with the greateſt aſſurance; and, like his predeceſſor, he ſhortened his days by thoſe brilliant diſcoveries, which ought to render their authors immortal.

Among his works of pure and genuine practice, even his adverſaries acknowledge the merit of his *Treatiſe of the Stone.*——In it, his theory is rendered much more clear; and, even at this day, we may profit by the peruſal of this original eſſay. We may alſo find, in various paſſages of his other writings, ſeveral uſeful views on the ſubject of fever and catarrhal affections, and particularly on the relations of aſthma to epilepſy;—relations from which the author deduces a very intelligent plan of cure.

As chemiſt, Van Helmont holds a diſtinguiſhed rank. Many curious experiments, and even many diſcoveries that have contributed to the recent advancement of the ſcience, entitle him to the everlaſting gratitude and eſteem of thoſe who can duly appreciate his labours. It is to him, that we are indebted for our firſt knowledge of the properties of aëriform fluids; and it was he, who applied to them the name of *gas*, by which they ſtill continue to be diſtinguiſhed.

SECTION XII.

Of Sydenham.

When Sydenham appeared in England, the ſcience of phyſic ſtill retained its ſcholaſtic form. The progreſs of the other branches of knowledge had hitherto exerted only a prejudicial influence upon it; and the genuine ſpirit of obſervation was almoſt entirely unknown. Sydenham, after a ſhort courſe of ſtudy, aſſiſted by a little reading, but guided chiefly by the impulſe of a happy genius, undertook to bring back the practice of the art to the path of experience. With the prevailing theories of the time he was but imperfectly acquainted; but this circumſtance was, perhaps, more favourable to his labours, as it could never be embarraſſing to his ſelf-love, and as he would find the leſs difficulty in following the footſteps of Nature. Among the number of his friends was the illuſtrious Locke, to whom we are indebted, if not for the firſt principles of a philoſophical method of inquiry, at leaſt, for the firſt demonſtration of the fundamental truths on which they are founded. The friendſhip of ſuch a man ſufficiently indicates the diſpoſition of mind of the perſon who cultivates it, and ſerves, as it were, for its ſtandard of compariſon. We can, therefore, ſcarcely doubt, that the counſels of the philoſopher muſt have greatly contributed to the ſucceſs of the phyſician, who, indeed, acknowledges it himſelf with candour*.

Sydenham attacked, with the irreſiſtible arms of experience, ſeveral deſtructive prejudices, which at that time prevailed. The chemiſts, for inſtance, had introduced into medicine the indiſcriminate uſe of cordials, and of ardent or volatile ſpirits. In acute diſeaſes, in particular, the abuſe of theſe remedies was very great. Sydenham proved, that, in ſuch caſes, they were almoſt always injurious, but eſpecially at the commencement of the diſorder. The ſmall pox, and other acute cutaneous eruptions were treated by ſudorifics alone. Sydenham demonſtrated, that this mode of practice had been more fatal to mankind, than a long ſucceſſion of deſtructive wars. His *Treatiſe on the Gout* has been generally regarded as a maſter-piece of deſcription: it is, indeed, the moſt perfect account of this diſeaſe which we poſſeſs; not, that this malady always preſents itſelf in the manner in which it is deſcribed, but becauſe we can conceive nothing more accurate or ingenious, than the plan of obſervation which he there lays down.

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* In his *Treatiſe on Acute Diſeaſes*, he mentions, as a proof of the excellence of his method, the circumſtance of its having received the approbation of his illuſtrious friend.

Hippocrates, in his Epidemics, had ſketched the outlines of a ſyſtem of phyſic, as extenſive as it was original: (I allude to his treatment of epidemical diſorders). During ſeveral ages, his ideas had remained, in a manner, dormant. Baillou, a Pariſian profeſſor, in the 16th century, appropriated them to himſelf, and extended them; not, indeed, as a man of genius, for he was not ſuch, but, at leaſt, as an attentive obſerver and ſkilful practitioner. He was even led to conſider them in ſeveral new points of view.

Sydenham, without having any knowledge of Baillou, perhaps, even without having read Hippocrates, was led into the ſame path by obſervation alone. He purſued it with ſtill greater ſucceſs,

ceſs; and in this his chief glory conſiſts. It is only ſince his time, that we have become thoroughly acquainted with thoſe general variations to which the characters of epidemic diſeaſes are liable; with the relations they bear to each other, and their connection with the different apparent changes of the atmoſphere, or their independence of theſe changes, which is often very apparent; with the influence they exert upon ſporadic or local diſorders; and, laſtly, with the manner in which their ſucceſſion is regulated, although the order of it, we muſt confeſs, has not yet been ſubjected to any determinate rules, upon which we can entirely rely.

The practice of Sydenham effected a real revolution in phyſic. It was the triumph, not of a tranſcendent genius, who reforms every thing by bold and general views, but that of an obſerver, who inveſtigates with ſagacity, who conducts his reſearches with ſkill, and who is always guided by a ſure method. The theories of Sydenham were, it muſt be acknowledged, contracted, or even erroneous; and beyond the ſphere of his experience, in which his natural penetration ſupplied the place of all other talents, his ideas were, in general, very limited; but no phyſician ever exerted ſo beneficial an influence on that branch of the art, to which all the others are ſubſervient—on its practical application: and in this reſpect, no one was ever more deſerving of the title of reſtorer of true medical ſcience.

SECTION XIII.

Diſcovery of the Circulation of the Blood.

The genius of Bacon and Deſcartes had powerfully aided the progreſs of the human mind. Deſcartes, in particular, attracted the attention of Europe, by the novelty of his ideas; for Bacon was not thoroughly underſtood till a much later period. The rational ſcepticiſm and novel methods, that were employed in the reſearch of truth, promiſed to change the whole face of intellectual philoſophy. The application of algebra to the geometry of curves, and a ſyſtem of aſtronomy, which explained all the phenomena, by the laws of motion, might be expected to operate the ſame revolution in phyſical ſcience. The latter, accordingly, was cultivated with greater attention. The experimental path, which had been ſo highly extolled by Bacon, became generally introduced by Galilei, his cotemporary, and the diſciples of the Florentine Academy, whoſe reſearches were guided by the moſt regular and accurate methods. Finally, the geometry,

metry of fluxions, which had been hinted at, and even pointed out, by Fermal, Deſcartes, Paſcal, and ſome others, was ſoon after invented by Leibnitz and Newton*. It opened a new career for genius, and furniſhed it with the means of purſuing it. It gave reaſon to entertain hopes of many further diſcoveries, which, before, it muſt have appeared abſurd to attempt. This new inſtrument, compared with thoſe which mankind had hitherto poſſeſſed, was, to uſe an expreſſion of Leibnitz, like the club of Hercules, compared with the feeble arms of a mortal warrior.

Amid this general impulſe, that had been communicated to ſcience, medicine did not remain ſtationary. A circumſtance, which I ſhould have before noticed, had prepared it for all kinds of innovations, by again ſubverting the authority of the ancients, whoſe phyſiological errors it completely expoſed: I allude to the circulation of the blood, which had been obſcurely hinted at by the unfortunate Servet; more clearly hit upon, if I may ſo expreſs myſelf, by Varolius and Columbus; deſcribed with accuracy, and even in ſufficient detail, with reſpect to the heart and larger veſſels, by Cæſalpinus; but of which the complete demonſtration is due to the labours of

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* It appears to be now aſcertained, that the merit of this diſcovery is to be excluſively aſcribed to Newton.

Harvey,

Harvey, to whom the merit of it is now excluſively attributed.

The new light which was thrown upon the animal economy, by this important diſcovery, ſerved only, we may affirm, to redouble the rage of ſyſtems. Nothing elſe was thought of, but to cauſe the blood to circulate more freely, to deſtroy its viſcoſity, to draw off from the body that which was ſuppoſed to be corrupted, to purify it, correct it and renew it, and to preſerve the blood-veſſels in a relaxed and pervious ſtate. Hence thoſe torrents of aqueous and diluent drinks, with which Bontekoe and his adherents, inundated their patients. Hence that ſanguinary fury, which the partiſans of Botalli thought themſelves entitled to exerciſe, in their treatment of all ſorts of diſeaſes;—a fury, which, though ſo often damped, in ſome meaſure, by ſyſtematic murders, has ceaſed only for intervals, and ſtill, from time to time, reappears in the ſchools. Hence, too, that wretched mania of the transfuſion of blood, of which the practice almoſt always deprived thoſe who had the temerity to ſubject themſelves to ſo dangerous an operation, of their life, or their reaſon.

Thus, one of the moſt beautiful diſcoveries of modern medicine, far from elucidating the practice of the art, as there was every reaſon to expect, only had the effect of miſleading weak imaginations, dazzled by its ſplendour: and it may ſtill be doubted, whether its application to the knowledge and cure of internal diſeaſes has been of any real uſe. In ſurgical caſes, even, where its aſſiſtance is generally regarded as indiſpenſable, might not obſervation almoſt always ſupply its place? And muſt not we limit its importance to the elucidation of a point in anatomy and phyſiology, very curious, no doubt, in itſelf; but which, if it did not indirectly affect many other intereſting queſtions relative to the animal economy, would, perhaps, have contributed very little to our knowledge of its true laws?

However, under this point of view alone, the diſcovery of the circulation has been productive of advantages by which the practice of medicine has eventually profited; and the glory of its authors can be conteſted only by the moſt ridiculous envy, or the moſt inconſiderate attachment to paradox.

We have ſeen the ſcience of medicine ſubjected ſucceſſively to the opinions of Heraclitus, Pythagoras, Epicurus, Ariſtotle, &c. When the philoſophy of Deſcartes, after having been arraigned for its impiety, came by degrees into vogue, and was transformed even into a ſpecies of ſuperſtition; medicine was carried along by the general current of opinion, and became Carteſian.

The chemical theories of acids and alkalies, which were applied to the fluids of the living body; the pure mathematical theories, by means of which men, who were, in general, of inferior talents, both as phyſicians and geometers, pretended to explain the functions of the different organs of the body; the hydraulic theories that ſucceeded, and which ſerved as the foundation of ſo many erroneous calculations with regard to the circulation of the blood and other fluids; and laſtly, the mechanical views that were broached, reſpecting the general laws of motion, and their influence on the phenomena of life, or reſpecting the advantages which may be derived from an acquaintance with them in the illuſtration of theſe phenomena;—all began to attract very general attention, when there appeared a new profeſſor, who was deſtined to effect a real revolution in the ſcience.

SECTION XIV.

Of Boerhaave.

The early part of Boerhaave's youth had not been ſpent in the ſtudy of phyſic. Deſigned, at firſt, for the church, but afterwards captivated with a taſte for the mathematical and natural ſciences, upon which he employed himſelf, for ſome time, in giving lectures, in order to earn a livelihood, it was not till he was pretty far advanced in life, and after he had acquired a thorough and extenſive acquaintance with all the ſubjects of his early ſtudies, that he commenced his medical career. His mind had already been greatly improved in point of ſtrength and comprehenſiveneſs, and he had acquired a habit of rigorous diſcuſſion and patient reſearch. But his talent of diſcernment, exerciſed, as it was, upon ſubjects altogether new, and at a period of life when the impreſſions of external objects begin to be weakened, in conſequence of a certain diminution of the ſenſibility, or become more confuſed, in conſequence merely of their variety; under theſe circumſtances, his talent of diſcernment never, perhaps, attained that degree of perfection, which, at the bedſide of the patient, can alone render the gifts of knowledge and the powers of reaſon productive of real utility. Beſides, how could he be expected to renounce the natural deſire of applying his more recent acquirements to thoſe which he formerly poſſeſſed? Imbued, as he was, with the ſcholaſtic learning of the times, how could he have baniſhed entirely from his labours the uſe of forms, methods, and hypotheſis? Relying with confidence on the ſure and rigid operations of geometry, how natural was it for him, ſometimes to wiſh to introduce them into a ſcience which it is ſo highly deſirable to free from its unſteady, and too often uncertain character!

We have above remarked, that Boerhaave was poſſeſſed of great and extenſive knowledge, and was deſirous to apply it to all his ſyſtems of phyſic. He had peruſed the writers of all ſects, and of all ages: he had analyſed, illuſtrated, and commented upon their works. With all their labours he was acquainted: all their opinions were familiar to him. He appropriated them to himſelf; he modified and combined them, and imparted to the whole that luminous order for which he is ſo much diſtinguiſhed. He ſoon gave to the world his Inſtitutions of Medicine and his Aphoriſms, two of the moſt conciſe, and at the ſame time comprehenſive, works that ſcience had yet produced; and which, for variety of matter and extent of views, had been ſurpaſſed only by thoſe of the illuſtrious Bacon. Happy would it have been for chemiſtry, which is indebted to him for ſome very important diſcoveries, if the imaginary notions of various acrimonies and their neutralizations; and if the introduction of pure mechanical and hydraulic theories had not ſo often disfigured ſuch uſeful labours. Fortunate, too, would it have been, if, in his deſcriptions, he had adhered more cloſely to the natural order of the formation of ideas, and had begun by collecting and claſſing facts and data, in place of always commencing with the concluſions. Then might the writings of this extraordinary man have ſerved as models of the true methods of reaſoning and of teaching, as they are unqueſtionably maſterpieces of erudition, of criticiſm, of order, perſpicuity, and preciſion.

Boerhaave publiſhed ſeveral ſeparate works on various branches of medicine, in all which the ſame vigour of mind is conſpicuous. His Prelections on the Diſeaſes of the Nerves, his Conſultations, and his Letter to De Gorter, ſhew that Boerhaave, at a more advanced period of life, and after having exerciſed himſelf in the obſervation of nature at the bedſide of the patient, attached much leſs importance to his ſyſtems, and that he was gradually approaching nearer to the ideas of Hippocrates, and of all ſound phyſicians. But the two works I have formerly mentioned, contain the ſubſtance of his doctrines, and, as they were deſigned for text-books to his lectures, they give a very complete idea of his plan of inſtruction.

The medical ſchool of Leyden, which boaſted of many able profeſſors, at the time that Boerhaave became a member of it, is now no longer celebrated but for having produced him: Its fame is, as it were, eclipſed by his renown. After having remained, during his lifetime, at the head of the medical world in Europe, his name, for a long time after his death, preſerved the ſame degree of luſtre. The talents of his diſciples, diſperſed over all the countries of the world, have procured it both admiration and reſpect: and, doubtleſs, a name ſo deſervedly illuſtrious, will be tranſmitted to the lateſt poſterity, not, perhaps, as that of a real and tranſcendent philoſophical genius, but as that of a very able and laborious teacher, and as that of a very elegant writer.

SECTION XV.

Of Hoffmann and Baglivi; of the new Solidiſts of Edinburgh; and of the School of Montpellier.

About the ſame time, Hoffmann, profeſſor in the Univerſity of Halle, grounded his practice and theory upon a new ſyſtem, which has received the name of *Solidiſm.* It was the old Methodical doctrine*, modified by the. opinions of Hippocrates, and by the modern diſcoveries in chemiſtry and philoſophy.

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* Proſper Alpini had before made an attempt to revive it.

The eloquent Baglivi, of whom ſcience was deprived by a premature death, had ſketched the outlines of this ſyſtem, in his courſe of lectures at Rome, the celebrity of which attracted pupils from all parts of Europe, and alſo in his treatiſe *De Fibra motrice et morboſa.*

Theſe two phyſicians*, then, rejecting or limiting the opinions of the Humoral Pathologiſts, according to whom the fluids exerciſe a direct and eſſential influence upon the healthy and morbid ſtates of the ſyſtem, reſtored this important office to the ſolids. They endeavoured to ſhow, that the changes in the ſtate of the fluids, are merely the conſequences and neceſſary effects of the changes which the ſolids experience. In ſhort, according to their hypotheſis, the operations of life, and all its revolutions, are effected in the *ſolid* parts of the ſyſtem, which, from this view of the ſubject, Hoffmann termed *ſolidum vivens.* The Solidiſts, however, are diſtinguiſhed from the Methodic ſect in this reſpect, that the former, along with Hippocrates, acknowledge the exiſtence of a vital principle, the laws of which can be known only from the obſervation of the phenomena peculiar to living bodies; and theſe phenomena themſelves, according to them, reſult from the agency of this principle upon the fibres, among which nature is ſuppoſed to have diſtributed it, for the purpoſe of animating them all with a certain portion of energy and activity.

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* Hoffmann, in his opinions, approaches nearer to Baglivi, than to Proſper Alpini.

The principles of Hoffmann are found ſcattered through his extremely voluminous works, which, however, diſplay much learning, and contain many good practical remarks. He has abridged them, and delivered them along with all their illuſtrations, in his laſt performance, intitled, *Medicina Rationalis Syſtematica.*

Theſe principles ſeem to have given birth to thoſe now taught in the Edinburgh School;—a ſchool juſtly celebrated for a rare aſſemblage and uninterrupted ſucceſſion of diſtinguiſhed profeſſors in many different branches of learning.

The name of *Animiſts* had been applied to the immediate followers of Stahl, ſuch as Alberti, Juncker, Nenter, &c. Thoſe, who have ſince combined his views with the doctrines of the Solidiſts, and Chemical or even Mechanical phyſioligiſts, ſuch as De Gorter, Gaubius, Sauvage, and Robert Whytt, have received the name of *Semi-Animiſts.*

To conclude; from the opinions of Stahl and Van Helmont, and of the ſect of Solidiſts, extended, modified, and corrected, as they were, aroſe a new ſyſtem, on which Bordeu, Venel, Lamure, and, we may venture to ſay, almoſt the whole ſchool of Montpellier, have conferred great luſtre and renown. This ſyſtem, enlarged, as it has been, ſince the time of theſe celebrated profeſſors, by the extenſive labours of Barthez; ſupported by his pupils and ſucceſſors with all the additional proofs which modern diſcoveries and the progreſs of the collateral ſciences could furniſh; improved by the application of philoſophical methods, which men of genius now begin to introduce into all the branches of our ſcience, —this ſyſtem appears to be gradually approaching nearer to the truth. It will probably ſoon ceaſe to be regarded as a particular doctrine: and, by taking advantage of the real diſcoveries that are to be found ſcattered among the different ſects; by diveſting itſelf of that jealous ſpirit which extinguiſhes real emulation, and which has engendered nothing but ridiculous diſputes; it will probably become the only incontrovertible theory in medicine; as it will form the natural and neceſſary link between all the particulars of medical knowledge that have been collected, down to the preſent time.

SECTION XVI.

Of the preſent State of Medical Education.

In every age the ſchools have allowed themſelves to be more or leſs guided by the prevailing ſyſtems; which was ſo far proper. But, by a ſingular fatality, they have, almoſt without exception, participated in all their errors, without deriving much advantage from the new truths which had commonly furniſhed the firſt hints of theſe ſyſtems, or from the uſeful views, which the moſt abſurd of them might ſtill ſuggeſt to intelligent minds. The errors, in general, were more eaſily combined with received opinions, and, accordingly, were moſt readily adopted. Every thing, which was but remotely allied to theſe doctrines, made leſs impreſſion upon underſtandings that were already preoccupied, and was therefore rejected, or ſuffered to lie in neglect. The education of youth, which, from the revival of learning, had been intruſted to bodies of men, ſlow in their proceedings, and obſtinate in their tenets, and who, beſides, either from vanity or policy, felt themſelves intereſted in oppoſing the introduction of all new ideas, conſequently ſeldom kept pace with the progreſs of public opinion. Among the Arabians, the univerſities were placed in the hands of a particular claſs of men, who, though they did not, as among us, belong to the Sacerdotal order, yet formed, in reality, a diſtinct corporate body, the conduct and opinions of which were governed by a certain ſpirit, that was pretty uniform in its nature and operation. Among the Greeks, it is true, the philoſophers preſided over the ſchools; but, perhaps, in no other nation has the ſectarian ſpirit been puſhed to the ſame degree of exceſs: and however perfect the ancient ſchools of medicine may have been, their ſucceſs, in general, depended much more upon the capacity of the maſters, and much leſs upon the character of the eſtabliſhment, than thoſe of modern times. It was therefore natural, that they ſhould experience more frequent and entire revolutions. Beſides, too, many branches of human knowledge, neceſſarily connected with medicine, were ſtill in their infancy; and that happy conſtitution of the literary world, which makes the advances of each part conſpire to the progreſs of the whole, did not yet exiſt.

Perhaps, it may be neceſſary to add one further remark, (but a remark applicable to all ages of the world) viz. that the moſt able profeſſors have not always ſhewn themſelves the beſt obſervers, or the men of moſt comprehenſive minds. For, it muſt be confeſſed, the allegation is not altogether unfounded, that thoſe ſituations, for which a facility of ſpeech may become in itſelf a principal recommendation, ruin more underſtandings than they are capable of forming. A man ſoon becomes intoxicated with the ſucceſſes of the profeſſorial chair, as well as with thoſe of the roſtrum : and, if it be no eaſy matter to avoid being prepoſſeſſed in favour of opinions, which we have delivered ſo often with applauſe ; it is, perhaps, ſtill more difficult to reſiſt the temptation to reject all ideas that tend to contradict theſe opinions, and to endeavour to pervert from their natural meaning, the facts that appear capable of diſturbing the tranquil enjoyment of certain prejudices, for which we have long contended.

In the ſchool of Cos, or rather in the ſchool of Hippocrates, medicine was taught according to the beſt principles. A true philoſophical ſpirit, and not a blind adherence to ſyſtem, directed its plan of inſtruction. Obſervation, experience, the due culture of the ſenſes, and the method of induction, were its foundations. We have already ſeen, that the pupils of this ſchool were conſtantly ſurrounded with the objects of their future labours ; with books *, inſtruments, medicines, and, in particular, with patients, without the inſpection

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* From a paſſage of Xenophon we learn, that, even at that time, there exiſted a conſiderable number of books. *Vid. Memorabilia.*

of whom it is aſtoniſhing, that ſome nations, ſufficiently enlightened in other reſpects, have for ſo long thought it poſſible to educate phyſicians.

But in the age of Hippocrates, and for many centuries after his time, the ſcience of anatomy remained in a ſtate of infancy; and the anatomy of the human body, in particular, was ſcarcely known. The art of ſurgery afforded no fixed rules for ſeveral of the moſt important operations. The materia medica was confined to a few remedies of great efficacy, but too violent to be uſed in common practice, without danger. The art of pharmacy could not be ſaid to exiſt. Finally, mineralogy, chemiſtry, mechanical philoſophy, and all the branches of natural ſcience, which have a more or leſs intimate connection with the art of medicine, had ſcarcely acquired their elementary principles, or were obſcured and loſt in falſe and ridiculous theories.

This period, then, could not be expected to produce a perfect plan of inſtruction: although that which was adopted, appears to have been, otherwiſe, extremely well contrived. It is ſolely with regard to the manner of viewing the living ſyſtem, and of obſerving and deſcribing the phenomena of diſeaſe, that the Hippocratic ſchool has left us models worthy of imitation.

I ſhall paſs over a long ſpace of time, during which the condition of the ſchools can ſuggeſt no very pleaſing reflections to the inquirer, and in which the ſtate of education preſents nothing but a ſcene of confuſion.

At the end of the ſixteenth, and in the ſeventeenth century, the advancement of ſcience was great and rapid; while the ſyſtem of inſtruction made little or no progreſs. During this period, in particular, we perceive a wide difference between the doctrines contained in the beſt books, and thoſe of the ſchools; between the prudent advances, the more ſteady and exact proceedings, and the more independent tone, of the authors of the time, and the blind routine, the ſcholaſtic jargon, and the mean and ſervile prejudices, of by far the greater part of the teachers*.

It is in the eighteenth century, that the ſyſtem of inſtruction has made real progreſs. To the jargon of the ſchools has ſucceeded a language more pure and more preciſe. The improvement of mathematical methods; the employment of more accurate means of inveſtigation in phyſics and natural hiſtory; that philoſophical ſpirit, which, by degrees, has become univerſal; that refinement and taſte, which the numerous maſterpieces in literature and the arts have rendered a ſort of want for the poliſhed claſs of ſociety in all nations; have at length compelled the ſchools to caſt off their barbarous rubbiſh. Reaſon ſurrounded them, and aſſailed them on all ſides: and even took poſſeſſion of their benches. Juſtice is now done them. They have long bravely combated againſt common ſenſe; and we may even perceive, that their impotent remains would be ready to renew the conteſt: but reaſon has conquered; folly has been overthrown, and, in ſpite of all its efforts to riſe again, muſt for ever remain ſo. The duration and the obſtinacy of this ſhameful conflict are preciſely the circumſtances that preclude the poſſibility of a return to ancient methods, and, above all, to ancient errors; in favour of which latter alone the former are of value, in the eſtimation of a certain deſcription of people. Doubtleſs, thoſe men, who are the firm and faithful votaries of truth, will, in all ages, be attacked by ignorance, and perſecuted by hypocriſy: but the triumph of their cauſe is henceforth ſecured. Many parts of human knowledge have attained a ſort of perfection; a rich ſtore of materials is collected for others: it only remains for us to apply the true methods of reſearch to all equally; and, above all, to apply them with equal ſtrictneſs to all the branches of inſtruction.

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* The Jeſuits rendered great ſervices in this reſpect; but the Society of Port Royal gave the firſt example of a philoſophical method of inſtruction.

But, if it be the peculiar buſineſs of the philoſopher to trace theſe methods, it can belong only to the legiſlator to transfuſe the ſpirit of them into the organization of the public ſeminaries of education.

There are, no doubt, many employments, which the government ſhould content itſelf with merely protecting. When private intereſt is ſufficiently cogent, every thing ſhould be left to it; for the interference of public authority tends, for the moſt part, only to ſtint and diſtort its operation. Thus, many great and ſplendid undertakings, from which a whole nation derives advantage, are much better executed, when the legiſlature takes no concern in them: and inſtitutions, in a manner, above the power of ſovereigns themſelves, are eaſily accompliſhed, by the union and concurrence of the individuals intereſted in them.

We may reaſonably entertain hopes, that this will one day be the caſe with education. Knowledge will, in all probability, become ſo indiſpenſably neceſſary to the exiſtence and happineſs of mankind, that they will be induced to ſearch for it every where with eagerneſs. From that moment, it will become a branch of induſtry, equally honourable and profitable to thoſe who are capable of exerciſing it: from that moment, governments may rely upon this reciprocity of intereſts, as tending to ſecure both the advancement of ſcience, and the progreſſive improvement of public opinion.

But in the preſent ſtate of affairs, when it is ſo neceſſary to ſtop the progreſs of rapine, of folly, and of madneſs, which are reappearing in ſuch a variety of ſhapes; when quackery, ever ready to take advantage of the wavering ſtate of opinion, ſhould be checked with more vigilance than ever, by the laws, at the ſame time that it is expoſed in all its deformity by ſcience; and when the place of ancient errors is as yet but imperfectly filled by well aſcertained truths;—at ſuch a time, it is doubtleſs incumbent upon government to point out the proper objects of ſtudy, and to give the firſt impulſe to public opinion. It is incumbent upon it to eſtabliſh the courſe of inſtruction on a plan conformable to the legiſlative ſyſtem of the country, in order that they may mutually ſecond each other, while they are gradually corrected and improved. And it is, moreover, incumbent upon it, to lend every poſſible aſſiſtance to phyſicians of genius and ſkill, in order to enable them to effect the complete reform of their art, which, from its nature, requires both more vigilant ſuperintendence, and more powerful encouragement*.

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* The Government of the Republic has greatly contributed to the promotion of this object, by organizing the preſent Schools of Medicine, and, in particular, thoſe of Paris and Montpellier.

CHAPTER III.

General Views on the Subject of Medical Education.

SECTION I.

Of the Faculties of Man; of the Sources of his Errors; and of the Invention of Philoſophical Methods.

MAN, from the nature of his organization, is endowed not only with the faculty of ſenſation, and the power of transforming his ſenſations into conceptions, and of deducing from the latter a ſeries of judgments and moral perceptions; but alſo with the faculty of participating in the ideas and ſentiments of others, of appropriating to himſelf thoſe which are communicated to him, and of imitating and repeating the actions which he witneſſes, or which he learns from teſtimony. He is enabled to take advantage of the labours of his predeceſſors, as well as of thoſe of his cotemporaries—to command the experience of ages: and if the means of communication with his fellow-creatures were ſufficiently perfect, he might be ſaid to live in paſt, preſent, and future time, and to coexiſt, as it were, with the whole human race.

It is by means of the ſenſes with which nature has furniſhed him, or, rather, that ſenſibility, which renders all his organs ſubſervient to the energy of his brain, that man becomes acquainted with external objects. His ſenſations are the immediate ſources of his knowledge, and the organs of his body, in as far as they are endowed with ſenſibility, the direct inſtruments of his inſtruction. But urged, as he is, by his wants, and by that eager curioſity, which continually incites him to exertion, man, at leaſt in a ſocial ſtate, ſoon begins to form to himſelf other inſtruments, the artificial products of repeated trials and ſtudies, which tend to augment conſiderably the energy or activity of his organs. Theſe new inſtruments of power are ſometimes directly applied to the organs of ſenſe; at other times, they ſerve to enlarge and facilitate the operations of the underſtanding; and they even appear, at times, to unfold faculties equally new with themſelves. All theſe different inſtruments are capable of being improved by culture, experience, and reflection, and, upon their gradual amelioration, the progreſſive improvement of the whole human race depends.

In their natural order, the impreſſions which we receive are, no doubt, juſt and conformable to the manner in which we ought to feel. For, if they were not, no efforts of art could ever render them ſo. The ideas which they generate ought therefore to have the ſame character of juſtneſs, when nothing extraneous occurs to corrupt them, either in their original ſource, or in the ſeries of organic operations that conſpire to produce them. Thus, it appears, man naturally thinks and reaſons juſtly.

Sad experience, however, teaches us, that error is more familiar to him than truth. In all countries, and in all ages, we find him eagerly graſping at chimeras: every where, he appears to be the ſport of the moſt degrading prejudices, which he cultivates and cheriſhes, and often deifies and adores. And ſince it cannot be denied, that this fatal diſpoſition is common to the whole ſpecies, we muſt conclude, that the original cauſe of it exiſts alſo in nature.

The chief diſtinction between man and other animals conſiſts in his ſuperior ſenſibility, or the faculty of receiving a greater variety of ſenſations, and more lively ſenſations, than they are capable of procuring. Now, lively ſenſations occaſion prompt deciſions; and a multiplicity of ſenſations are diſtinguiſhed and examined with difficulty. In theſe circumſtances, therefore, the operations of reflection are liable to become nothing but falſe concluſions from facts.

In all thoſe caſes, it is true, in which puniſhment immediately follows error, the latter cannot be of any long duration. The cuſtom of forming erroneous judgements is, in this caſe, accompanied by a ſeries of painful feelings; and the firſt of all wants leads us, of courſe, to ſhun the cauſes on which they depend. In this way, then, every one learns to correct for himſelf theſe falſe judgments. But the objects, to which this obſervation is applicable, are confined within a very narrow ſphere in the ſocial ſtate: they almoſt all relate to direct and natural wants, which form but a ſmall part of the relations that unite man and man, and abridge the empire of folly in a very limited degree.

In general, it would require much time and tranquillity to examine, with due attention, the motives of the opinions we adopt, or of the line of conduct we are led to purſue. But the circumſtances that incite us to action are, in general, urgent, and oblige us to decide without delay. The neceſſity of coming to a prompt determination, therefore, is a fruitful ſource of error, and it is frequently miſtaken for a falſe inſtinct, or produces habits of precipitancy, which give it that appearance, even in caſes where there would be ſufficient time for reflection.

Strong impreſſions may alſo take poſſeſſion of the judgement, and may disfigure the objects, or at leaſt prevent us from examining them in all their different lights. In fine, a vicious habit of feeling and judging, contracted by imitation; and the ſtill more common and vicious habit of affixing to our own ideas, or to the ideas of others, ſigns which are neither uniform nor well determined; both theſe habits tend to encreaſe the difficulty of completely avoiding error: and all theſe cauſes, no doubt, depend, in a more or leſs immediate manner, upon the very nature of our faculties, and the relations that ſubſiſt between us and the objects of our judgments.

Hence it comes, that man, formed as he is, for reaſoning always juſtly, reaſons almoſt always wrong. Hence it comes, that the ſame order of things, which renders truth neceſſary to him, and which points out its courſe, ſurrounds him at the ſame time, with ſnares and falſe indications; and, in this way, thoſe very qualities, which ſhould enable him to diſcover and to recogniſe it, are apt to become the ſources of a number of groſs errors, which conſtitute, as it were, his ordinary condition, to which good ſenſe forms, in ſome meaſure, but an exception.

The art of regulating the human mind becomes, therefore, neceſſarily the ſubject of a laborious ſtudy: it is an art, the theory of which demands all the powers of attention, and the practice of which requires all the cautions of experience.

perience. We muſt learn, not only to combine, to reflect, and to conclude; but we muſt alſo learn to ſee, to hear, to touch, or in a word, to feel.

Scarcely had philoſophers begun to obſerve the external world and themſelves, when they perceived, both what we might become, and what we were not. They endeavoured to diſcover the cauſes of our errors and their remedy: but, as this cauſe was ſtill operating upon themſelves, at the very moment they were engaged in oppoſing it, the remedy conſequently became more difficult of diſcovery. However, each framed his hypotheſis; each delivered his ſyſtem. But the number of thoſe who have taught us how to direct ſucceſsfully the operations of our underſtanding is very limited; and their labours have left much to deſire.

Hippocrates, Ariſtotle, and Epicurus appear to have been the only perſons, among the ancients, who were fully aware, that, in this ſpecies of reſearch, it is neceſſary to begin by the obſervation of what paſſes in our mind when we feel and judge; becauſe they alone had perceived diſtinctly, that our ſenſations ſupply the materials of our judgments. But of the opinions of Hippocrates and Epicurus, on this point, no ſyſtematic expoſition remains; and although Ariſtotle has left us an ingenious analyſis of the reaſoning powers, we may reduce all the true and uſeful matter which his ideological writings contain, to the celebrated axiom, ſo often quoted, but which, in no part of his works, is to be found ſtated in preciſe terms.

From Ariſtotle to the time of Bacon, no real improvement took place in philoſophical methods: and error, reduced to a kind of ſyſtem, became every day more difficult to eradicate.

Bacon, taking a rapid ſurvey of all the branches of ſcience, perceived the ſource of the vain conjectures which disfigured them, and of the falſe doctrines with which they were encumbered. Not ſatisfied with tracing the plan of their reform, he endeavoured to remould the inſtrument by which we acquire our knowledge: with him the reſtoration of true philoſophy may be juſtly ſaid to commence.

Since that time, the progreſs of ſcience has been rapid. Hobbes, Locke, Bonnet, and Condillac have ſucceſſively improved upon the views of Bacon[*], and have rendered the proceſſes of philoſophical analyſis more ſimple and more ſure: they have, in particular, eſtabliſhed the rules for its employment, upon a more accurate knowledge of the faculties and operations of the human mind[†].

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[*] Sée note [I].

[†] I refrain from mentioning, in this place, the ſucceſſors of Condillac, ſeveral of whom appear to me to have added to the

Theſe faculties and operations, deſcribed and inveſtigated, as they have been, with an extraordinary degree of minuteneſs, exhibit, in what may be called the natural hiſtory of the underſtanding, a model of the true method of reſearch,—of the only one applicable to all the branches of ſcience. For it is by this method that we are enabled to obſerve accurately the objects of our reſearches, to acquire clear and exact ideas of their properties, to claſs them and connect them in ſyſtems that do not deſerve the name of conjectural: it is by its aid, that we are enabled to ſtudy, teach, and communicate theſe ſyſtems: and, laſtly, it is this method which not only ſimplifies and facilitates the acquirement of knowledge, in the greateſt degree, but alſo, by preſenting the particulars of which it is compoſed in their moſt natural order, impreſſes them firmly on the memory, and gives us a ready command over them.

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the preciſion of the Analytical Method, and, perhaps, even to have opened new channels for its employment, and to have eſtabliſhed its principles upon a more ſolid foundation: but they are ſtill living; and time alone can decide upon the merit of their labours.

SECTION II.

Application of the Analytical Method to the Art of Medicine.

To return to medicine:—we ſhall find that with reſpect to it the employment of the true method of reſearch will not prove leſs fruitful in uſeful reſults.

Man, like other animals, is ſuſceptible of painful as well as agreeable impreſſions. He is even much more ſuſceptible of both, than any other known deſcription of beings. Of this the reaſon is ſufficiently ſimple. His ſenſations proceed from a greater variety of objects; and his imagination, the activity of which they augment, reacts, in its turn, upon his ſenſations, and imparts to them a greater degree of energy, or cauſes them to aſſume new and unuſual directions.

Painful ſenſations conſtitute diſeaſe, in the ſame way that pleaſurable feelings conſtitute the ſtate of health and well-being.

It is eaſy to perceive, that the moral ſufferings and the happineſs of man depend more or leſs immediately upon theſe two phyſical ſtates; that they are, to ſpeak correctly, nothing but theſe two ſtates themſelves, conſidered in different points of view, or in relation to particular circumſtances.

cumſtances.—But to enlarge on this point would be foreign to our preſent purpoſe.

A painful ſenſation cannot be regarded as a diſeaſe. When it is tranſient, nature remedies it herſelf, and the remembrance of it is very ſoon effaced. If pain or uneaſineſs, however, is prolonged, then it becomes a real diſeaſe. In this caſe, however, nature does not remain inactive; but adjuſts in ſecret a variety of new actions, which, for the moſt part, are directed towards the re-eſtabliſhment of health. At the ſame time, an internal and powerful monitor leads man to ſeek for aid among external objects: and having learnt from experience, that ſeveral of theſe objects may effectually remove his various wants, he makes trial of them ſucceſſively, in all thoſe caſes, in which the ſuggeſtions of this monitor are heard.

All our ſenſations may, no doubt, be compriſed under the two general heads of *pleaſure* and of *pain;* but they are, nevertheleſs, varied, as it were, to infinity, or, to as great an extent as the objects themſelves which produce them. For external objects act upon animated bodies in many various ways; and the more or leſs permanent conſequences that follow their operation are as various as the immediate ſenſations they occaſion.

This obſervation muſt occur to the mind as ſoon as we begin to look around us: the importance and frequent repetition of the leſſon prevent it from ever being forgotten.

It often happens, however, that there is no relation between the immediate ſenſation and the permanent effect it produces. The thing that pleaſes, may prove injurious: the thing that diſpleaſes, may become beneficial.—Another obſervation, which is not quite ſo obvious as the former.

To conclude; certain objects do not, at firſt, cauſe any particular ſenſation, and appear to have no very diſtinct effect; yet we find, that, afterwards, either by recollection, or by a long continued habit, they produce very important conſequences.—A third remark, which we make much later; which is confirmed only by a great number of examples, and which, conſequently, has no influence upon the conduct of man till after the errors he is continually committing, from inattention to it, have become the ſource of reiterated painful ſenſations.

Before arriving at this degree of knowledge, man muſt be ſuppoſed to have collected many particulars reſpecting the diverſity of the cauſes that are capable of producing in him the feeling of uneaſineſs, and of thoſe that tend to alleviate or remove it. The mere deſire of avoiding painful or diſagreeable ſenſations, would induce him to make a variety of exertions; and, from theſe repeated exertions, would ariſe a ſyſtem of obſervations, at firſt, no doubt, very imperfect, but more or leſs calculated for the uſe of families, communities, and nations.

Fortunate accidents, the example of other animals, the appetites of perſons in a ſtate of diſeaſe, would all ſerve to augment, by degrees, this original ſtock of knowledge. Experiments would be quickly multiplied; and by this increaſe in their number alone, they would become more bold, rational, and applicable to our daily wants.

Condillac has remarked, that men naturally analyſe; that is, that they naturally obſerve, compare, and judge correctly. Nothing can be more true: but it is only with reference to ſimple objects,—to objects which may be viewed in all their different lights at once, that the obſervation is altogether juſt;—with reference to facts the mutual relations, or identity of which are eaſily recogniſed;—and with reference to fixed, or nearly invariable data, that are limited in their number, and equally eaſy to collect, to determine, and to compare in every point of view.

Unfortunately, theſe favourable circumſtances do not attend the ſtudy of ſeveral ſubjects, that form an important part of our knowledge. The objects, for example, to which medicine and moral philoſophy are directed, preſent many ſerious difficulties. The ſciences of medicine and ethics, accordingly, muſt remain much longer in a ſtate of infancy; or at leaſt their principles muſt, of neceſſity, be longer in acquiring that evidence and ſolidity, without which they can ſcarcely be regarded, by exact

minds,

minds, as forming real bodies of ſcience. On the other hand, thoſe branches of reſearch that aim at the determination of the moſt ſimple and invariable properties of bodies, as, for inſtance, the properties of numbers or extenſion, will, in the hands of men of talents, make very rapid advances, of which the human mind may juſtly boaſt, and of which, at every new ſtep, it may verify the certainty, and even duly appreciate the importance.

In proportion as the particulars of our knowledge are augmented, it becomes more neceſſary to claſs them and diſtinguiſh them. Claſſifications are, indeed, abſolutely neceſſary for aſſiſting the memory, and for regulating the operations of the mind. If they were limited to this object, they would invariably be productive of benefit. But men are too often led to imagine, that nature ſhould ſubject herſelf to the order they preſcribe to her; and preſumptuouſly deduce practical rules for all poſſible caſes, from this order, which, for the moſt part, has no exiſtence but in their own imaginations.

In this way, methods of arrangement become a new ſource of confuſion: in this way, the mind, deviating from the true path of reſearch, ſubſtitutes, in the place of real objects, its own fictions and chimeras; in this way, the abſtract notions it acquires (which, of courſe, muſt be very inaccurate, ſince their elements are liable to be changed upon every freſh application) become the baſis of judgments and practical rules, probably, of the higheſt importance;—and frequently, theſe judgments and practical rules have no juſt foundation whatever.

SECTION III.

Of the Difficulties that oppoſe the Application of the Analytical Method to the Obſervation and Treatment of Diſeaſes.

AMONG the various ſubjects, which man, from his wants, is obliged to ſtudy with attention and aſſiduity, there are few that combine, in the ſame degree, as medicine, all the difficulties attendant on that unſettled and variable character we have been deſcribing; and there are few, in which the raſh and inconſiderate employment of generalization may be attended with more ſerious diſadvantages.

To give an example: we ſoon learn from obſervation, that the ſymptoms of pain of ſide, cough, ſpitting of blood, accompanied with fever often occur together. We, conſequently, ſoon accuſtom ourſelves to regard this aſſemblage of ſymptoms as a particular affection, and apply to it the name of *pleuriſy*;—a name taken from the pain of ſide, which being always felt by the patient, becomes, of courſe, to him the predominant ſymptom.

In many caſes, in which theſe different phenomena take place, they are relieved by profuſe natural hemorrhages—and artificial evacuations of blood produce the ſame effect. The patients, ſuffering much from thirſt, feel a deſire for mild and diluent drinks: theſe drinks occaſion gentle ſweats, and the latter contribute alſo towards recovery. Expectoration now takes place; and this diſcharge, too, may be promoted by other deobſtruent drinks. Finally, after a more or leſs evident effort of nature, the ſymptoms altogether diſappear, and health is re-eſtabliſhed.

In the liſt of remedies correſponding to the catalogue of diſeaſes, oppoſite to the word *Pleuriſy*, we accordingly find, in the firſt place, *blood-letting*, *diluent drinks*;—next, *deobſtruent* and *expectorating remedies*;—and, laſtly, *gentle ſudorifics*.

It is evident, that in this inſtance I adopt the moſt favourable ſuppoſition—that, in which the ſymptoms are well characterized, and in which the effects of the medicines are ſtriking and eaſily diſtinguiſhed. Thus, we are ſupplied with an axiom, or rule of practice; the deduction of which ſhews us in what manner all the other rules may be obtained, in thoſe caſes where their formation is conducted upon ſure principles, and on a proper plan.

Suppoſing the ſymptoms expreſſed by the abſtract term *pleuriſy* to occur by themſelves; and the nature of the curative means, and the time and order of their adminiſtration to have been accurately obſerved; in ſuch a caſe, the word *pleuriſy* certainly denotes nothing more or leſs than the character of the diſeaſe; and the ſucceſs of the remedies employed may be confirmed by a ſufficient number of examples. In this caſe I repeat, the rules that are laid down for the employment of theſe remedies, are, in reality, deduced from facts, and obtained by the ſure method of induction.

But, in other caſes, to which we alſo apply the word *pleuriſy*, on account of the preſence of the principal phenomena, expreſſed by this generic term, bloodletting is found to be injurious; diluent drinks augment the diſeaſe; deobſtruent medicines either exhauſt the ſtrength, or produce abſolutely no effect; while, on the other hand, it happens, that, ſometimes, copious vomitings, occurring ſpontaneouſly or produced by art, anthelmintic remedies adminiſtered in more or leſs inconſiderable doſes; at other times, the ſpeedy employment of cathartics and diaphoretics; at other times, again, the application of veſicatories, &c. remove, either inſtantaneouſly, and, as it were, by enchantment, or moderate by degrees, and by a ſucceſſion of partial criſes, the lancinating pain of ſide, the cough, hemoptyſis, &c.

Theſe caſes, ſo different from each other, ſince they can be cured only by different modes of treatment, are, it is true, characterized by certain acceſſory ſymptoms by which we may immediately diſtinguiſh them; or by particular circumſtances from which we may indirectly deduce their exiſtence. But before they had been recogniſed, deſcribed and diſtinguiſhed by attentive obſervers, they remained for a long time confounded together under the deceitful diſguiſe of a common name.

SECTION IV.

The ſame Difficulties and Dangers occur in the Claſſification of Remedies.

If we proceed to the claſſification of remedies, we ſhall often meet with the ſame obſtacles: and theſe obſtacles will be found to depend upon the ſame cauſes.

One remedy, for inſtance, promotes perſpiration; we, accordingly, place it in the claſs of *Sudorifics*:—another removes the ſuppreſſion of the menſes; and we, conſequently, rank it among the *Emmenagogues.* Theſe properties, which, from imperfect trials, have been aſcribed to them, and in the determination of which ſo little regard is, in general, paid to the particular circumſtances of the caſe, and the circumſtances in which the remedy has been adminiſtered, are often completely illuſory; unleſs, indeed, we have the good fortune to employ theſe remedies in caſes preciſely the ſame in all reſpects, as thoſe that furniſhed the original obſervations. We, alſo, very ſoon perceive, that the remedies we call *ſudorifics* may impede or ſuppreſs perſpiration; that thoſe which we qualify with the term *emmenagogues* may often increaſe the ſpaſm or inactivity of the uterus, and aggravate the diſeaſe they were deemed capable of curing.

The ſame muſt be acknowledged with regard to all remedies that poſſeſs ſpecific properties. Of theſe, there are none, which, according to the caſes they are employed in, may not produce abſolutely contrary, or, at leaſt, widely different effects.

If we look into the books of materia medica, we ſhall find many remedies ranged ſucceſſively in almoſt all the different claſſes of medicines; whence we might be led to believe that they all produce the ſame effects: And, as the traces of the original obſervations that occaſioned theſe contradictory qualities to be aſcribed to them, are, for the moſt part, entirely loſt, it is only by dint of labour and reſearch, that we are able to extricate ourſelves from this labyrinth. Hence, it comes, that the indiſcriminate peruſal of theſe works is ſo very dangerous, even for a great many phyſicians. Hence, it comes, that thoſe phyſicians who reſpect the lives of their patients, and are not inclined to place an overweening confidence in their own judgment, find themſelves obliged, ſometimes, to recur to the original ſources of information, and to try to diſcover, in the obſervers, the myſtery of theſe apparent contradictions; and at other times, to repeat the experiments themſelves, endeavouring to forget what they have met with in books, in order to learn it from nature. Hence, too, perhaps, that inveterate ſcepticiſm with which medicine inſpires many enlightened minds.

The reader will have little difficulty in conceiving, that, when the circumſtances are changed, the operation and effects of remedies upon the animal economy, can be no longer the ſame. Now, the circumſtances, in which living bodies may exiſt, are as ſuſceptible of variation, as the whole of the external or internal cauſes capable of acting upon them. In fact, they are ſynonimous with theſe cauſes; and as the delicate ſenſibility of the human frame renders it liable to be affected by a number of different agents, it is ſolely by the moſt diligent obſervation, that we can learn to apply the remedies preciſely in the circumſtances which indicate their employment, and that we become juſtly entitled to expect determinate effects from their exhibition.

SECTION V.

Of the Attempts that have been made to improve Medical Claſſifications.

The abuſe of ſyſtem, as Ariſtotle had remarked even in his time, is not leſs injurious to the intereſts of ſcience, than its total want. Of this we have juſt ſeen ſufficient proofs, and the abovementioned philoſopher affords us more than one example in ſupport of thoſe we have already adduced. This tendency, indeed, appears to be one of the moſt deceitful and dangerous ſnares, if we may uſe the expreſſion, to which the human mind is expoſed.

In the courſe of daily practice, which obliges them continually to compare the methods of claſſification with nature, men of reflection very ſoon perceive the incorrectneſs of ſuch arrangements. They ſee nature ſporting, as it were, with that puerile pride, which fondly imagines it poſſible to compenſate for inaccurate views by the pomp of ſyſtem, and which appears deſirous to dazzle itſelf by a ſort of ſcientific ſplendour. They feel the neceſſity of recurring to the obſervation of facts, and of determining with greater preciſion the uſe of general terms. Hence the idea of definitions—the firſt ſtep towards a reform of the methods of arrangement.

If our object were only to obtain purely rational views of ſcience, and to examine the objects of reſearch merely with reference to a few particular or very ſimple properties, definitions would certainly be ſufficient for our purpoſe. They are eaſily underſtood, and enable us to reaſon correctly.

But the caſe is different when we attempt to apply our knowledge to practical purpoſes. Then, it is no longer queſtion of abſtract terms, which ought always to retain the meaning in which they were firſt employed. It is no longer the circle or the triangle of geometry; it is no longer the relations of fixed and invariable numbers. Nor is it that pleuriſy defined by a phraſe which calls to mind the cough, the pain of the ſide, the ſanguinolent expectoration: but we have to conſider various combinations of phenomena, always differing from one another, always particular and ſpecific, that preſent themſelves to view: and the more we are capable of juſt obſervation, the leſs we perceive of thoſe ſuppoſed ſimilarities of diſeaſes,

eaſes, which have no exiſtence but in the brains of unreflecting or inattentive obſervers. In ſhort, we conclude by diſcovering nothing but individuals to exiſt in nature. Hence, Leibnitz was led to affirm, that there are not two leaves which reſemble each other in every particular.

Thus, then, the inevitable errors, which the vague and undeterminate meaning of words introduces into our methods of arrangement, ſoon ſuggeſt the neceſſity of referring our general ideas to the elements of which they are compoſed, that is, to the objects, or to the particular facts from which they are deduced; the neceſſity of aſcertaining, whether theſe ideas comprehend the latter exactly, and whether they may not preſuppoſe others which have not been derived from obſervation; in fine, the neceſſity of accurately determining their mutual relations, and the preciſe meaning of the terms that are uſed to denote them. To attain this object, we, at firſt, have recourſe to definitions; but we ſoon perceive, that their aid is very inſufficient; that there are many ſerious inconveniences attendant upon claſſifications; and that a definition, in order to be exact, and to leave no vague impreſſion upon the mind, muſt approach more and more to a circumſtantial deſcription, and can be perfected only by becoming an actual deſcription of the object to which it refers.

SECTION VI.

Of other Difficulties which we have to encounter.

In this way, inquirers find themſelves brought back to the point from which they had ſet out, and ſurrounded by all the difficulties in which the multiplicity and variety of the objects of reſearch had at firſt involved them. After having remarked the abuſe of ſyſtematic arrangement, they feel more ſtrongly than ever the ſtate of abſolute incapacity, in which the privation of this artificial inſtrument leaves the mind; and find, that they muſt either overcome theſe difficulties, or ſubmit to waver perpetually between ignorance and error.

Theſe obſtacles that oppoſe an improved arrangement of the particulars of our knowledge, and theſe inconveniences, which manifeſt themſelves, eſpecially when we endeavour to apply our acquirements to practical purpoſes, are not the only ones we have to ſurmount. The ſtudy of different ſubjects preſents different degrees of difficulty: the objects of reſearch, for inſtance, may not be all equally eaſy to obſerve and inveſtigate properly: the advantages we may derive from their uſe (the only relation in which it is of importance to us to become acquainted with them) may be more or leſs extenſive, more or leſs direct, and more or leſs obvious. The ſubjects which it would be moſt uſeful for us to ſtudy, are very far from being always the moſt eaſy to learn. To take an example connected with our ſubject: how much experience in obſervation, how much ſagacity is required for diſtinguiſhing, in a diſeaſe, the primary and eſſential phenomena that characterize it,—the phenomena to which all the others are merely acceſſory or conſequent! How great ſkill and diſcernment are neceſſary for appreciating the influence which the latter have on the original diſorder, and for aſcertaining the modifications they produce in it, even while they remain entirely ſubordinate! How much preſence of mind and attention are requiſite for following all the variations of ſymptoms; in order not to be deceived by the different appearances which the diſeaſe may aſſume, in its different ſtages, or by the changes, which its natural character, or new and unuſual combinations of ſymptoms, or the influence of external circumſtances may cauſe it to experience! Add to this the embarraſſment, which the inveſtigation of the remote or proximate cauſes cannot fail to occaſion to an accurate obſerver.—Upon this point, however, I muſt beg leave to revert to opinions which I have elſewhere delivered, but which it is abſolutely neceſſary to keep conſtantly in view, if we are deſirous to become acquainted with the method of reaſoning upon a ſeries of obſervations.

The term *cauſe* ſhould not lead us to regard the phenomena of nature as involved in one another, or as engendered and generative by turns: for our knowledge is entirely confined to facts—and all that ſyſtematic obſervation can effect, is to eſtabliſh their analogies or differences, their mutual independence, or their ſubordination and connection. Two facts may either reſemble, or differ from each other: they may appear always together, or may happen ſometimes ſeparately. If we obſerve one event conſtantly ſucceed another, we call the firſt the *cauſe*, and the latter we ſtyle the *effect*. But theſe terms impart no new qualities to the objects they denote; but merely expreſs the order of their ſucceſſion. However, it is of great importance for us to aſcertain this order; ſince the preſence of the former event announces with certainty the appearance of the latter. Without this ſort of knowledge, all hiſtory would form but a vain ſeries of recitals, wholly devoid of connection. Without this knowledge, the hiſtories of different diſeaſes, imperfect and ridiculous as deſcriptions, would become uſeleſs, and even dangerous, as ſtandards of compariſon for practice.

But if it be difficult to aſcertain the order of events, which the ſpontaneous operations of nature, or the ordinary courſe of things preſent to view; it is doubtleſs far more difficult to recogniſe and determine, with preciſion, the ſucceſſion of the phenomena which may be called *artificial*, ſince art produces them by the ſyſtematic employment of various unuſual agents.

A man, for example, experiences pain, after a variety of circumſtances, which may be all equally capable of occaſioning it. If this pain ceaſes of its own accord, amidſt a number of other circumſtances, which are complicated and connected together, nothing but ignorance and want of reflection could lead us to regard the real cauſe of the diſeaſe and of the cure as eaſy of diſcovery. If the favourable change takes place after the uſe of certain remedies, which, from analogy, were preſumed to be beneficial, the conjecture, that they have really been ſo, becomes more uncertain in proportion as the inſtances of a ſimilar ſucceſs, in ſimilar caſes, are leſs numerous: and it is only in the courſe of time, and by repeated obſervations in different circumſtances, that it comes to attain a very high degree of probability.

I have deemed it adviſable to place in the ſtrongeſt light theſe firſt obſtacles that render the progreſs of the mind, in the ſtudy of medicine, and, above all, in the application of its general views or principles to practice, ſo difficult and uncertain; thinking, that it could not but prove uſeful, to aſcertain the different ſources of our errors; ſources which, unfortunately, are too prolific, and which are inherent in the very nature of the objects of reſearch, or in that of the inſtruments we employ for inveſtigating them and applying the knowledge we acquire to the common purpoſes of life.

SECTION VII.

We always neceſſarily revert to Syſtem, which, in itſelf, can never prove prejudicial. How, then, ought it to be applied to Medicine?

We may obſerve, on the one hand, that the want of ſyſtem can never be dangerous for any length of time; as nature too powerfully impels us to have recourſe to its aid: and, on the other hand, we may remark, that the abuſe of ſyſtem always proceeds, not from itſelf, but from the imperfect manner in which its rules have been traced. We do not err, becauſe we have too much method; but becauſe that which we employ is not good. In proportion as it improves, we invariably perceive, that all the faults and inconveniencies, which we deemed inſeparable from it, gradually vaniſh. The too general rules, drawn from the reſemblances of objects, are corrected by other rules, deduced from their differences. We recur to particular facts: the diſtinctions and exceptions themſelves are arranged, and formed into other more partial ſyſtems; and from all theſe ſucceſſive operations, the effects of which ſerve mutually to correct or balance each other, are deduced reſults which become every day more accurate and perfect.

In the application, in fine, of our theoretical knowledge to the purpoſes of life, and to the alleviation of our daily wants; in thoſe operations of the mind, in which the ſlighteſt errors of reaſoning may be productive of the moſt fatal conſequences; there is ſtill an experimental and practical method, the offspring of the conſtant obſervation of facts, and of the uninterrupted employment of the inſtruments of ſtudy. A happy inſtinct, rather than ſcience, points out the firſt principles of this method, and follows them as a ſure guide, long before its proper rules can have been determined. But in a ſhort time, ſcience illuſtrates and extends them:—philoſophical genius connects and arranges them, and, above all, improves their application. Enriched by the continual acceſſion of new obſervations, directed from day to day by views, at once more general and more ſure, this practical method is, in time, enabled to rectify whatever is too abſolute or rigorous in other ſyſtems too excluſively confined to theory: and when ſubjected itſelf to certain modifications, indicated or rendered neceſſary by particular circumſtances, it becomes, in ſome meaſure, aſſociated with the idea of talents, of which it is the offspring, but the place of which it never can ſupply.

In the ſtudy of the therapeutic branch of phyſic, or, in that branch which it is the aim of all the others to improve, the rules can be developed only at the bedſide of the patient: and their application can be determined only by a long ſeries of examples, which ſhould, in a manner, exhauſt all the poſſible combinations of ſymptoms, or, at leaſt, repeatedly diſplay the elements of theſe combinations; and which, in particular, ſhould be firmly impreſſed on the memory, in order that we may be enabled to recogniſe, at firſt view, the diſtinguiſhing characters of each diſeaſe amidſt all the complications which may diſguiſe them and obſcure them.

It is in this way, that ſkilful practitioners are formed, under the guidance of able teachers. Yet theſe teachers, it muſt be confeſſed, will often find, that it is impoſſible to communicate to their hearers certain delicate and fugitive perceptions;

and that there are ſome ſorts of reaſoning, which cannot be expreſſed in preciſe terms, and certain operations of judgment, which are apt to be miſtaken for direct ſenſations. The phyſician, in whoſe mind the motives of his deciſions ſuggeſt themſelves by a very rapid aſſociation, can impart them only to men equally well organized as himſelf. To acquire theſe perceptions, to form theſe judgments, reaſonings, and deciſions—is the excluſive attribute of genius.

SECTION VIII.

Of the great Influence which Language exerts upon the Sciences; and of its Reform.

AMONG the various cauſes capable of accelerating the progreſs of ſcience, there is certainly none more powerful in its operation, than language:—a truth too generally admitted to require further proof and illuſtration in this place. Language, the firſt bond of ſocial union, the offſpring of the firſt fraternal ties, after having formed and ratified all the contracts of riſing nations, has ſerved to connect more cloſely the intereſts and exertions of individuals, to direct them by an impulſe that ſoon became independent of them; and, by aſſociating itſelf with all the details of private and public life, has exerted the moſt powerful influence upon all the inſtitutions, and upon all the cuſtoms of civil ſociety. Whereever the language, and, in particular, the written language, was well formed, the progreſs of the ſocial ſtate has been rapid and ſure. Whereever, on the contrary, circumſtances, which it is almoſt impoſſible to determine with accuracy, had led to the adoption of a bad ſyſtem of language, and of fixed ſigns, or of writing, the nations have remained in ignorance, or have groaned under the yoke of oppreſſion.

But the advantages of language, when well formed, and its inconveniences, when vitious, have been chiefly felt in the ſciences, and particularly in thoſe ſciences, of which the objects are very variable, and, conſequently, often very imperfectly determined.

Words arreſt, as it were, our ſenſations: they recall them and impreſs them; and by retracing them to the mind, they furniſh us with the means of conſidering them in all their different lights, of comparing them with one another, and deriving from them our ſimple ideas, which form the immediate reſult of this compariſon. Theſe ſimple ideas, in their turn, perform, in ſome meaſure, the ſame part as our direct ſenſations. They become

come impreſſed on the memory, they are recalled, and compared, by the aid of words, and ſo forth. Whence we may perceive, that not only the more complicated and enlarged ideas are expreſſed, when formed; but are alſo formed and developed, by this artificial inſtrument of thought. It is, therefore, the accuracy and proper employment of words, or, more generally ſpeaking, of ſigns, that we muſt regard as the criterion of truth: and it is to their vague character, and to the uncertain and confuſed manner in which they are uſed, that we muſt attribute the imperfect notions, the prejudices, the errors, and all the vicious habits, which the mind acquires.

In almoſt all the branches of medical reſearch, the language employed is very ill formed. It has become gradually more and more vitiated, by the falſe application of words borrowed from the other ſciences, and by a certain unmeaning and ridiculous jargon, which a culpable reſpect for prevailing prejudices has too often led practitioners to adopt.

It is from the Greeks and Arabians that we have derived our firſt notions of medicine; and, it is, in particular, from the works of Hippocrates and Galen, that the modern profeſſors have borrowed the ſubſtance of their firſt doctrines. The diſeaſes deſcribed by the ancients have retained the names which had been originally beſtowed upon them: the inſtruments, the remedies and preparations, which have been diſcovered or imagined by the Arabians, have been handed down to us, along with the terms by which they were deſignated by their inventors. When the uſe of written language began to be introduced into France, Latin was the language of the learned: our firſt medical works, accordingly, are compoſed in it. When French came to be uſed, medicine ſtill retained its ancient terms, which ſuffered ſcarce any change but in their terminations. Beſides, the barbariſm of the ſchools was, at that time, at its height: and in them it was the faſhion to ſpeak in a manner both formal and burleſque, and to write in a ſtyle that was obſcure and trivial, pompous and unpoliſhed. In this ſtate of things it was ſcarcely to be expected, that a medical language could be framed, which would be acknowledged by reaſon and by taſte.

To take an example:—Anatomy, too often cultivated, as it has been, by mere diſſectors, rather than by minds capable of conſidering it in its true light, is, perhaps, more than any other branch of medicine, embarraſſed and obſcured by this vice of words, which, in time, comes to diſfigure the objects themſelves. It is unneceſſary to adduce the proofs of this aſſertion, which are really numberleſs; for the fact can be no longer a matter of doubt but to thoſe who would be incapable of following its examination. Some inſulated views on the neceſſity of reforming the language of anatomy may be found ſcattered in various works. Vicq-d'Azyr, who, in the Second year of the Republic, fell a victim to his ardour for ſcience, and his zeal in aſſiſting the poor with his knowledge, has prefixed, to his Anatomical Plates, a diſcourſe on the ſpirit which ſhould guide and direct this reform. Notwithſtanding the reſpect I feel for the memory of a man who has done ſo much for ſcience, I cannot help obſerving, that this part of his work is unworthy of the ſubject and the author. It happened to Vicq-d'Azyr, as it has done to ſome other men of letters, and philoſophers, who imagine that they are following the *analytical method*, becauſe they employ its ſigns and expreſſions. But, when we attempt to apply this method to new objects, we muſt adapt it to their peculiar nature and character; we muſt inveſtigate and aſcertain the rules which ought to guide its application; and we muſt, above all, avoid that confuſion of terms, which it is its principal object to baniſh.

Two other celebrated anatomiſts and phyſiologiſts* have publiſhed plans of a new anatomical nomenclature. Theſe plans diſcover the genius of their authors, and appear to have been dictated by a true philoſophical ſpirit. Nevertheleſs, I feel it incumbent upon me to make ſome general obſervations on the ſubject itſelf.

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* Dumas and Chauſſier. *T.*

The deſign of language is to tranſmit and to recall to mind our ideas, or the conceptions of all the objects that preſent themſelves to our ſenſes. Theſe ideas ought, in the firſt place, to be clear and preciſe. The *firſt* fault, then, of a language is, when the terms of it are confuſed, vague, and ſuſceptible of ſeveral different meanings. Secondly, our ideas ſhould be connected in a natural order, and claſſed in ſuch a manner as to cauſe the relations that ſubſiſt between them to be clearly and diſtinctly perceived. The *ſecond* fault, therefore, of a language will be, when its terms are not formed upon the plan of the actual generation of ideas; when they are transferred from one object to another; and when they are modified or combined without any determinate rule; when the application of rule does not remove every uncertainty with regard to the changes in their meaning, and indicate the relations and analogies of the objects themſelves, in the grammatical relations and analogies of the words by which they are deſignated. The third property of ideas conſiſts in their facility of recollection and communication. The *third* fault of a language, therefore, is, when it is difficult to be learned and retained. Laſtly, this ſpeaking picture, if we may ſo call it, of our ſenſations, or, rather, of the ideas which they generate, ſhould be capable of diſplaying the different characters of theſe ideas, by the harmony, the elegance, the force, and the vivacity of its expreſſion: it ſhould follow all the movements of the mind, and trace all their ſhades of diſtinction; and ſhould be able to addreſs itſelf with the ſame ſucceſs to the ſenſibility, the imagination, and the judgment. It is not merely the deſire of pleaſing, or the want of ſtrong emotions, that impoſes this laſt condition; but the clearneſs, the rapidity, the energy, and the permanence of the impreſſions require it; and it is by ſuch means alone, that our intereſt and attention can be ſupported for any length of time. Thoſe languages, which are at once exact and elegant, react, as it were, upon the mind, impart to it a new principle of activity, and, in this way, become the immediate ſource of a number of ideas, which never would have been produced without theſe additional impreſſions. Some perſons may think, that the language of ſcience ſhould aim merely at accuracy, preciſion, and clearneſs; and, certainly, theſe qualities are of the moſt eſſential conſequence: but the ſciences have not only a peculiar kind of elegance and beauty; they have alſo their peculiar manner of moving the imagination; and, ſometimes, without tranſgreſſing the bounds which a rigorous taſte preſcribes, they may addreſs themſelves even to the feelings of the reader.

It would be ſuperfluous to explain, what is meant by a *preciſe term.* In order to be ſo, it is ſufficient, if the word denote clearly a determinate object, and be in no way apt to recall the idea of any other.

The abſolute neceſſity which there is for following, in the formation of language, the ſame path that nature purſues in the production of ideas, is now univerſally acknowledged by men of ſcience; but I am of opinion, that they have committed ſome miſtakes with regard to this point, the cauſe of which it may not be altogether uſeleſs to determine.

The human mind, in its inquiries, has but one mode of procedure, viz. from the *known* to the *unknown.* But, ſometimes, from the nature of the objects of reſearch, this method may appear to aſſume an inverſe order. In the formation of a great number of our ideas, we proceed directly from the *ſimple* to the *complex;* while, in others, we begin with the complex in order to arrive at the ſimple. Thus, for inſtance, when our moral ſentiments firſt begin to be developed, and when the mind firſt examines and endeavours to reduce them to ſyſtem, we begin with the moſt ſimple data: afterwards, we combine theſe data, compound them and recompound them, as it were, to infinity, without ever being able to reach the term of theſe combinations and compoſitions. In the ſtudy, on the contrary, of thoſe ſubſtances, the analogies and relations of which we are deſirous to diſcover from the characteriſtic properties of their elements; in chemiſtry, for example, the principal object of which is to ſeparate the conſtituent parts of bodies,—the compound ſubſtances are the firſt which offer themſelves to view; and the ſimple ones, or thoſe which we regard as ſuch from not being able to decompoſe them, are always, of courſe, the laſt known.

Thus, the firſt ideas in moral philoſophy, and the firſt terms we employ in the ſcience, involve, if we may ſay ſo, nothing more than themſelves, and are ſcarcely ſuſceptible of decompoſition. In the firſt ſtages of civilization, for example, the term *virtue* implies merely the idea of *ſtrength*; and the uſe of the word does not extend beyond its direct meaning. But, by degrees, the idea of *virtue* comes to comprehend that of ſeveral other qualities or diſpoſitions, and the ſignification of the word is thus rendered every day more extenſive and complicated.

In chemiſtry, on the other hand, the firſt objects of our reſearches are compound bodies. In proportion as we make new diſcoveries analyſis generally reſolves theſe bodies into ſimple elementary principles; and the degree of this ſimplification may be regarded as an accurate criterion of the progreſs of the ſcience.

In both theſe examples, the mind proceeds from the *known* to the *unknown*, but not always from the *ſimple* to the *complex*.

This naturally leads me to offer ſome remarks upon the new nomenclature of chemiſtry. My high reſpect for its original authors, whoſe labours have imparted the moſt powerful impulſe, and given the moſt uſeful direction to phyſical ſcience; —my private eſteem for thoſe who are ſtill living, muſt be ſufficient to ſecure me from the ſuſpicion of wiſhing, in any manner, to detract from the importance of the ſervices they have rendered by the reform of a barbarous and abſurd language. Beſides, as the men of ſcience, in all nations, have ſhewn their eagerneſs to adopt the new nomenclature, and as its employment affords, in reality, many important advantages, the propriety of it, in itſelf, can be no longer called in queſtion. But, as it has been held forth, perhaps, in too unqualified a manner, as the model of other reforms of a ſimilar deſcription, which are required in various branches of ſcience, ſome obſervations upon the principles that have guided its authors, will not, I think, appear altogether miſplaced.

In chemiſtry the true radicals of the terms employed are not the ſimple ſubſtances; but, on the contrary, the compound ſubſtances: Theſe are the firſt known; and they are the firſt that receive names. According to the ſound principles of analyſis, therefore, ought not the names of the former to be derived from the latter? For the firſt term of a good chemical language ſhould not be that which expreſſes the laſt reſult, and which, conſequently, may be often the product of hypothetical opinions. In ſuch a caſe, the erroneous meaning that may be attached to it will naturally vitiate the ſenſe of all the other words with which it may be combined. To conclude; by the adoption of ſuch a mode of procedure, it will probably be found neceſſary to create a new language, whenever more extenſive or more accurate experiments ſhall have overturned the hypotheſis, or merely enlarged the boundaries of the ſcience.

Suppoſe that Stahl, after having compoſed his Treatiſe on Sulphur, one of the works which moſt clearly evinces both his ſkill in performing experiments, and his rare ſagacity in reaſoning from facts; ſuppoſe, I ſay, that Stahl had at that time undertaken to reform the barbarous language of chemiſtry, his confidence (juſt as it muſt be allowed to have been) in the exactneſs of his labours; the admiration of the ſmall number of competent judges of his merits, at that time in Europe; the neceſſity which had become very urgent,—the neceſſity which he might have perceived of transferring, to the ſigns employed to denote the objects of reſearch, the ſame accuracy that was obſerved in experimental inquiry: all this would doubtleſs have juſtified ſuch an enterpriſe on his part. Now, if in executing this reform he had not followed the order of the developement of our ideas; that is, if, in the formation of his terms, he had neglected to begin with thoſe of compound bodies, ſuch as they at firſt preſent themſelves to view, in order gradually to deduce the names of the products of their decompoſition, his new language would not have laſted much longer than his ſyſtem, upon which, of courſe, it muſt have been founded. If, on the other hand, he had followed the true path of nature, he, perhaps, would have completely ſuperſeded the neceſſity of the reform which has been effected in our time. It would have been ſufficient to have added the names of the newly diſcovered ſubſtances to thoſe which were already known; to have derived theſe new terms from the old ones, at leaſt, as often as this order of their formation was the ſame as that of the ideas they expreſſed; and to have combined them according to the moſt ſimple and natural relations. In this way, we may perceive, that the nomenclature would have had the ſame arrangement as the ideas themſelves; and that the new terms, as well as the new ideas that were acquired, would have arranged themſelves ſpontaneouſly, in a ſyſtem that was deſigned upon a uniform plan. For a ſkilful author, in the claſſification of the different ſciences, ought always to leave room for future diſcoveries; and the ſame may be ſaid of a language that is well formed: it ſhould furniſh the teſts, if we may be allowed the expreſſion, of the new terms which theſe diſcoveries may require.

With regard to the reforms which have been propoſed in the language of anatomy, it may, perhaps, be doubted, whether the name of any particular part ought to comprehend the deſcription or definition of the object it was meant to expreſs. To me it does not appear that it ought. The ſimple words, of which the ſenſe is direct, are unqueſtionably wholly arbitrary *. Provided that their general acceptation be determined with accuracy; that they do not ſound harſh to the ear, or recall diſagreeable ideas to the mind; it is of very little conſequence that they have been formed according to ſuch or ſuch a ſyſtem. It is only with regard to the more complex words which are derived from them, or with reſpect to thoſe which aſſume a figurative meaning, that we muſt be careful to follow the natural analogies, and to reproduce, if poſſible, the ſenſations by which we

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* In this circumſtance, indeed, it muſt be confeſſed, one of the greateſt advantages of language, and, in general, of all artificial ſigns, conſiſts.

become acquainted with external objects. A *leg* or an *arm* might be equally well deſignated by two other words, provided that the acceptation of theſe arbitrary terms were perfectly agreed upon, and that they never could be underſtood in a different ſenſe. The language might be more or leſs harmonious, more or leſs elegant: but it would be always exact and perſpicuous. *Bitter* and *ſweet*, which are ſimple qualities of objects, at leaſt with reference to the impreſſions which they make upon our organs of ſenſe, might be expreſſed indifferently by any other deſcription of terms. By ſuch a change we ſhould loſe nothing, either with regard to the preciſion of the meaning, or to the facility of the conception, or recollection of theſe ideas by the operations of memory. When we utter the words, *leg*, *arm*, we neither deſcribe nor give to underſtand, by theſe terms, the properties of the objects they recall to mind: when we ſay *bitter*, *ſweet*, we do not give the hiſtory of bitter and ſweet ſubſtances, nor even of the ſenſations they produce. But if we alter the meaning of theſe words, by applying them to other objects, if we endeavour to combine them with other words, in order to expreſs complex ideas; it is then no longer poſſible to adopt and to follow an arbitrary method. If, for inſtance, we apply the word *arm* to certain parts of a tongs or chair, and the word *leg* to other parts of a table or ſtand;

in order to be clear, and, indeed, to avoid becoming completely ridiculous, we are obliged to follow certain determinate rules of analogy. If we compoſe a word to expreſs a complex ſenſation; if, for example, we ſay *bitter-ſweet*, we ſhall ſtill be obliged to follow ſome other rules, which muſt be determined by the character and deſign of the combination of ideas and compoſition of words.

Having once aſcertained theſe principles, it will be no difficult taſk to appreciate the merits of ſome nomenclators who have endeavoured always to include the properties of an object in the word which denotes it. Theſe properties differing very much according to the point of view in which they are conſidered, it is eaſy to perceive, that their names may be equally various: and in this way, we have again recourſe to another arbitrary mode of proceeding, but which wants the advantages of brevity, ſimplicity, and unity; for the ſame object will then require as many different words to denote it, as there are different points of view in which it may be regarded.

To recur to examples. One of the moſt defective parts of anatomical nomenclature is certainly that of myology, or the deſcription of the muſcles: and it is alſo by its improvement, that the reform of anatomical language has, in general, been attempted to be commenced. But the chief fault with

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which it can be reproached is not, that it is overburthened with words of which the origin is unknown to the generality of ſtudents; or that it is incapable of rouſing their attention, or aiding their memory by the relation of the compound terms with the primitive or radical words; and of the terms of which the ſenſe is complicated or figurative with thoſe of which the meaning is ſimple and direct: but it has chiefly erred in the attempt to repreſent the properties of objects, or of the circumſtances that characterize them, in the original formation or compoſition of the terms it employs.

Nothing, beſides, is more variable, than the plan and proceedings of ancient nomenclators in this reſpect. Sometimes, they confined their views to the figure of the muſcle, as is ſeen with regard to the *trapezius*, the *ſplenius*, the *complexus*, the *faſcia lata*, the *deltoid*, &c.: At other times they diſtinguiſhed it by its real or ſuppoſed functions, as that of *obturator*, *flexor*, *levator*, *ſphincter*, &c. Sometimes, again, they deſignated it by the place which it occupies, as, for inſtance, the *palmar*, *pſoas*, *ſpinal* and *temporal* muſcles, &c.: At other times, the word which denotes it relates to the ſtructure of its fleſhy part, as is exemplified in the *digaſtric* muſcle: laſtly, the ſituation, number, or direction of their inſertions, have furniſhed the names of ſeveral. In framing this language of myology,

pedantry

pedantry ſeems to have united all its efforts, and certainly not without ſome ſucceſs.

In juſtice, however, to the authors of the new nomenclature, we muſt acknowledge, that all theſe inconſiſtencies have diſappeared from their ſyſtem. Their denominations are formed upon a uniform plan. The name of each muſcle indicates its inſertions: and to this ſole characteriſtic they have confined themſelves; which, indeed, has given the appearance of greater uniformity to their language. But it is poſſible, and even expedient to conſider the muſcles in many other points of view, in order to acquire a proper knowledge of their ſtructure: and, beſides, as their inſertions are often very numerous and complicated, one of two things muſt happen; either, that the name will expreſs them but imperfectly, or that it will be compoſed of ſeveral words joined together. Now, in the latter caſe, it frequently aſſumes a pedantic, and, ſometimes, a ridiculous form, and generally becomes very difficult to retain in the memory, and very inconvenient in uſe.

A word, I repeat, is not a deſcription: it ought not even to be a definition: but it is ſufficient if it deſignate, in a clear and unequivocal manner, the object which it repreſents. To deſcribe this object, to recount its properties or its functions, is not to name it, but to relate its hiſtory. We might as well enumerate the elements of which it is compoſed, retrace its analyſis, and diſplay the reſults.

The importance of the ſubject will, I truſt, be a ſufficient apology for theſe details into which I have judged it expedient to enter. It is evident, that, in this place, it would not have been allowable to purſue the inquiry ſo far as it deſerves; but the above obſervations may ſerve to convey a pretty diſtinct idea of what I mean by *a well-formed language*, and *the analytical reform of language.* This is the ſole object I have at preſent in view.

SECTION IX.

Of the falſe Application of other Sciences to Medicine, and of the Doctrines of the Mechanical and Ancient Chemical Sects.

In this place, I cannot help reverting to the conſideration of another cauſe (already often particularized) of the ſyſtematic errors of medicine;—errors, that introducing themſelves, as they have generally done, into practice, which they had the appearance of ſimplifying, have ſo frequently rendered the ſcience of phyſic more hurtful than beneficial to the unfortunate patients. I allude to the improper application which phyſicians have often made, to their art, of the general theories or particular views belonging to the other ſciences. Bacon remarked this abuſe, even in his time, and foreſaw all its fatal conſequences. He regarded it, with too much reaſon, as the cauſe of all thoſe deviations from the true path of inquiry, which the vogue of each new ſyſtem has led the ſcience of medicine to commit. It is to it that he particularly aſcribes the uncertainty which this ſcience has almoſt always evinced in its progreſs, and the little advantage which it has hitherto derived from the moſt ſplendid diſcoveries in the other arts and ſciences with which it is properly connected. We ought, therefore, to begin by ſeparating medicine from the ſciences that do not relate to it: and its principles ſhould be deduced ſolely from ſuch facts as really belong to it, that is, from obſervations and experiments upon the living body, in its healthy and diſeaſed ſtates. If, in the courſe of time, we can connect theſe facts with the principles appertaining to the other ſciences, it ſhould only be after having verified both ſeparately. Such was the opinion of Bacon.

A phyſician of very great talents, whom I have already quoted with reſpect, but not with enthuſiaſm, Baglivi adopted this idea in his lectures and writings. To it, indeed, he certainly was indebted for a great portion of his ſucceſs; and he appears to have erred at times, only from not always adhering ſtrictly to it. Latterly, Barthez has extended it, and ſupported it by all the proofs of which it is ſuſceptible, in a work that is conſpicuous not only for enlarged views of medical ſcience, but alſo for philoſophy and erudition.

At the time of Hippocrates, the ſcience of medicine, as we have ſeen in the former part of this work, had been already corrupted by its conjunction with the prevailing ſyſtems of philoſophy and coſmogony. Hippocrates perceived, with great acuteneſs, the inconveniences that reſulted from this alliance. This aſſiduous obſerver ſaw clearly, that nature generally pays no regard to the reveries by which we pretend to explain her operations, and that animated nature, in particular, has its peculiar proceſſes, which we muſt ſtudy in the facts themſelves, and not attempt to divine by vain conjectures, or more vain calculations. He, accordingly, attacked this abuſe very forcibly. Yet, a reſpect for truth, which ought always to take precedence of a reſpect for perſons, however great their genius and their ſervices may have been,—a reſpect for truth obliges us to acknowledge, that, oftener than once, he himſelf yielded to this propenſity, perhaps the moſt predominant in the human mind. In the place of certain doctrines which had become antiquated, or had been refuted by his own obſervations, he ſubſtituted others, that, no doubt, approached nearer to the truth, but which, nevertheleſs, were nothing more than conjectures. It is to him we owe that ſyſtem of the *Elements*, which holds ſo conſpicuous a place in the writings of the ancients, and in thoſe of their modern abridgers or compilers;—a ſyſtem which ſoon gave birth to that of the *Temperaments*, as they were at firſt claſſed. Hippocrates went ſtill further: he pointed out the more methodic application which was made of this ſyſtem, after his time, to the qualities of the principal fluids of the body, and even to the character of the different ſeaſons, each of which had that of one of the elements aſſigned to it, and was ſuppoſed to preſide over one of the humours.

In fact, although the ſyſtem of Galen tended, perhaps, rather to overturn the opinions that had prevailed before him, than to revive the true Hippocratic theory of phyſic, yet its author has done little more than develope, in a claſſical ſtyle, the different views that are found diffuſed through the works of the Phyſician of Cos, or in the writings which his diſciples have aſcribed to him.

The reader is already apprized, that this ſyſtem reigned in the ſchools, with deſpotic ſway, during ſeveral ages. Aſſailed, at the ſame time, by the admirers of Hippocrates, by the chemiſts, and by the empirical obſervers, it long bade defiance to all their redoubled attacks; and the practice of the art ſtill feels the effects of its long tyranny, even at this day, when no truly enlightened man would venture to declare himſelf an adherent of Galen.

We have ſeen above, that Aſclepiades founded his ſyſtem of phyſic upon the corpuſcular philoſophy. The ſtrong conſtitution of the Romans, however, ſeems, in ſome meaſure, to have braved the erroneous practice of their phyſicians, and to have withſtood the preſcriptions of Aſclepiades, as it had formerly done thoſe of Cato the Cenſor.

The Methodic ſect ſucceeded Aſclepiades, and introduced a new theory and new plans of treatment.

The firſt Chemiſts had attained a juſt ſuperiority over the ſchools. They had overthrown the Galenian ſyſtem, by reaſoning and by facts: they had diſcovered many powerful remedies, by the aid of which they were enabled to produce many new and ſurpriſing effects, and to accompliſh many impoſing cures. By theſe ſame medicines ſome quacks ſtill contrive to make their fortune, who employ them with more boldneſs, than men of true ſcience venture to do, and in whoſe hands they, no doubt, often prove fatal, but ſometimes effect a cure;—which is ſufficient for their purpoſe. Thus, Paracelſus, by the employment of opium and different mercurial preparations, often aſſumed the appearance of a ſovereign deity whoſe mandates nature obeys.

In a ſhort time, however, the operations that took place in the matraſs and alembic, became, in the eyes of theſe daring experimenters, a faithful image of the operations of the living ſyſtem. The vital functions, and the organic movements of every deſcription were believed to be nothing more than certain *fermentations*, *ebullitions*, and *ſublimations*. Thus, the faculty of contraction peculiar to the heart and arteries, the power of moving the limbs peculiar to the muſcles, and all the effects reſulting from theſe general properties, were ſuppoſed to originate in particular *efferveſcences* and *exploſions*. The production of animal ſpirits was imagined to be performed by a real *ſublimation*, in which the brain performed the office of the capital of the alembic. The *acids* and *alkalies*, ſometimes, oppoſing each other with violence, at other times, uniting quietly, were ſuppoſed to influence or modify almoſt all the organic functions. The acid juice of the pancreas combined with the alkali of the bile, in order to complete the grand digeſtive *fermentation:* and the mixture of the acid of the chyle with the ſaline or ſulphurous principles of the blood ſerved to produce the animal heat, &c. &c.

Led involuntarily into theſe repetitions, I, at leaſt, ſhould avoid their unneceſſary multiplication. I ſhall therefore conclude by mentioning, that one of theſe chemiſts, Tachenius, carried this mania ſo far as to aſcribe to the acids diffuſed through the body, which he regarded as the cauſes of all its diſorders, a ſort of prudence and diſcernment, that enabled them to ſelect from among the alkalis of the aliments or medicines, ſuch as were moſt proper for their neutralization.

Before the light of rational experience was able to diſſipate this maſs of abſurd chimeras, their ſyſtematic application to the treatment of diſeaſes had been attended with very fatal conſequences. The true ſpirit of philoſophy is diffident, and advances ſlowly: but the ſpirit of conviction and confidence, peculiar to enthuſiaſts, is as quick as it is preſumptuous. Diſorders and misfortunes were daily increaſing, and public opinion ſeemed to be deviating every day ſtill farther and farther from the truth. However, a certain boldneſs in rejecting the yoke of ſanctioned opinions; a certain reſtleſſneſs, which, if it do not directly lead to truth, muſt, at leaſt, prevent the mind from long purſuing the path of error, were ſtill able, amid ſo many gloomy objects of contemplation to the philoſopher and true medical obſerver, to inſpire them with juſt hopes of the future advances of ſcience. Indeed, it ſeems to be the peculiar characteriſtic of the chemical errors introduced at different periods into medicine, that they have, in general, no doubt, miſled

led inquirers from the right path of reſearch; but have never, perhaps, really retarded the progreſs of the ſcience: and the practice of the art owes the knowledge of many powerful remedies to their moſt dangerous experiments.

During the ſeventeenth century, geometry and algebra were cultivated with much ardour and ſucceſs. It may even be ſaid, that they became a ſort of faſhion. About the middle of the eighteenth century, the enthuſiaſm appeared to revive. Fontenelle and Maupertuis, who were men of the world, contributed to diffuſe a taſte for theſe ſtudies, more, perhaps, by their converſation, than by their writings. Maupertuis, with his ardent imagination, and his bold and comprehenſive views, carried along the indolent minds, who are always deſirous of novelty. Fontenelle, by the refinement of his ideas, by his peculiar manner of ſimplifying the moſt complicated ſubjects, and of connecting the moſt diſtant, and by his talent for tranſlating into common language the truths that are fartheſt removed from received opinions, ſucceeded in making his hearers as well as readers believe, that they comprehended perfectly all that he deſcribed to them in a rapid but perſpicuous manner.

About this time, as we have already ſeen, the philoſophy of Deſcartes, had become very generally prevalent. By the application of a new inſtrument of reſearch to the moſt difficult and important parts of the Science of Extenſion, Deſcartes had, in ſome meaſure, made a new ſcience of it. A novel ſpecies of calculation, that was bolder in its views, and more powerful in its operation, ſeemed ſtill more effectually to place geometry at the head of the ſciences:—and in its rigorous forms they imagined, that they had found the proper teſt of truth.

It was not to be expected, that phyſicians could have remained quiet ſpectators of this general enthuſiaſm. They ſaw many of the moſt remarkable phenomena of nature ſubjected to calculation. To become ſuſceptible of this ſpecies of proof it is ſufficient, that the phenomena obſerve a regular order in their ſucceſſion; that their appearances, revolutions, and changes, afford certain fixed points of view, in which they may be leiſurely conſidered. The functions of the animal economy appeared to offer theſe characters*. Geometry and algebra, accordingly, were applied to them with confidence; and phyſicians imagined, that the certainty of the inſtrument would be transferred to the reſults. All the learned in them in this belief; and theſe reſults publiſhed, as they were, in a dogmatic manner, were long regarded as oracular.

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* The phenomena of life, may, no doubt, in ſome points of view, be ſubjected to calculation: but theſe points of view are, in general, of little importance, and the moſt accurate inveſtigation of them throws ſcarcely any light upon the moſt intereſting problems of phyſiology and medicine.

Thus, Borelli, who may be called the claſſical geometer of medicine, proceeding upon the ſuppoſition that the food, ſubjected to preſſure from the action of the abdominal muſcles, diaphragm, and coats of the ſtomach, was triturated during digeſtion, eſtimates the force of the muſcles employed for this purpoſe to be equal to a weight of 261,186 pounds. Wainwright computed it at 260,000; Fracaſſini at 117,088; and Pitcairn at 12,900 pounds. It is now, however, proved, that digeſtion is performed by other means; that no trituration takes place in the ſtomach; and that the motion of that organ, as well as of the inteſtinal canal, is almoſt imperceptible in the healthy ſtate, even after the moſt copious meal.

According to Borelli, the combined force of the two ventricles and auricles of the heart is equal to 180,000 pounds. Hales calculates it only at 51 pounds, and Keil reduces it to 1 pound. This enormous difference in the reſults of the calculations, which ought, of courſe, to be always ſimilar, if the data were in the leaſt accurate, clearly ſhews the falſehood of them all.

Before the injections of Schwammerdam and Ruyſch had proved, by ocular demonſtration, the gradually decreaſing ſeries of the veſſels that convey the different animal fluids, the ſcience of hydraulics, which was then in a very low ſtate itſelf, acted but a ſubordinate part in medicine. But ſince that time, ſo remarkable, in other reſpects, for brilliant diſcoveries, the *tubes*, the *valves*, and the *piſtons*, have infeſted the nomenclature of medicine. The laws of equilibrium, of friction, and reſiſtance, the alterations in the force of the impelling powers, from the number, diameter, or direction of the tubes, have been introduced, as neceſſary data, into the explanation of the phenomena of the living ſyſtem. Almoſt all the ſects of phyſicians adopted, at leaſt in ſome reſpects, many of theſe illuſtrations; and, in practice even, it became cuſtomary to conſider the human body, merely as a ſyſtematic combination of ducts, communicating with each other, and in which nothing more was neceſſary, than to promote the free and eaſy circulation of the fluids.

But, in reviewing this period, I find myſelf obliged to recur to ſubjects that I have already diſcuſſed, and feel again the neceſſity of curtailing theſe repetitions. Indeed, it is, in a great meaſure, ſuperfluous to expoſe all the abſurd and ridiculous conſequences, which the different ſects of modern Solidiſts have deduced from a ſmall number of obſervations, that in themſelves were ſufficiently juſt. And it is hardly neceſſary to remark, that general and very important offices have been aſcribed to organs poſſeſſing only very ſecondary or very limited powers; and that imaginary relations have been eſtabliſhed between organs or phenomena, which have no connection whatever.

This maſs of incoherent opinions, which mutually ſubverted each other, forms almoſt the only fruit of the premature alliance, which the pride of ſcience was deſirous to eſtabliſh between phyſic and the other branches of knowledge. The examination of all the other hypothetical ſyſtems that have been framed in a ſimilar ſpirit preſents the ſame view of the ſubject.

How much reaſon have we to deplore the errors, to which practitioners open their eyes, for the moſt part, only after they have proved fatal to a number of unfortunate victims! In thoſe ſciences, of which the practical application does not directly relate to our moſt urgent wants, or in which the miſtakes committed may be eaſily rectified, errors in theory ſhock, no doubt, enlightened minds; for, in a ſingle inſtance of erroneous reaſoning, they are able to perceive the ſource of many falſe and dangerous conſequences, which may iſſue from it, as from a poiſoned ſpring: but, in general, ſuch errors are not of ſerious and direct importance. The Ptolomean ſyſtem of the world evinced, and probably prolonged the infancy of aſtronomy: but in practice it was productive of no pernicious effects; it was even ſufficient for the common operations of the ſcience. The Phlogiſtic theory of Stahl has not, as far as I know, proved fatal to any one; and even the progreſs of chemiſtry does not appear to have been much retarded by it.

In medicine the caſe is very different. The application of the rules which the practitioner lays down to himſelf is direct; and in their choice, no one can err with impunity. The leaſt erroneous view leads to ſome conſequence: we muſt remember that the lives of our fellow creatures are at ſtake. For how many cruel and premature deaths, how many impaired and debilitated conſtitutions have paid for the follies of theoriſts!—follies which have proved almoſt always faſcinating. The ſtudy of a ſyſtem is more eaſy than the inveſtigation of nature; and in practice it ſeems to ſmooth every difficulty. The mind loves to repoſe upon principles, which it believes itſelf entitled to ſubſtitute in the place of obſervation; and when theſe have been diffuſed to a certain extent, and have become a ſort of creed for weak and ſervile underſtandings, if misfortunes accumulate, and victims fall a ſacrifice, under this new ſcourge of humanity, they generally look for the cauſe of theſe evils in frivolous circumſtances, and are almoſt tempted to cenſure the eternal laws, without reflecting that theſe muſt always tend to our good.

SECTION X.

The Science of Medicine tends naturally to Hypotheſis, from the Nature of the Subject to which it is applied.

IN this ſtage of our inquiry two queſtions naturally preſent themſelves to the mind: In the firſt place, how comes it, that ſo many men of information and talent, who have had daily opportunities of obſerving diſeaſes and their cure, ſhould have allowed themſelves to be miſled by ideas, which their conſtant experience ſerved to confute? Secondly, how happens it, that the authors of the moſt wretched theories have ſometimes proved very ſkilful practitioners?

To the former of theſe queſtions the anſwer is ſufficiently eaſy. Nature ſeems to have ſtamped her works with falſe features of reſemblance; or, to ſpeak more correctly, we often diſcover imaginary relations between them. Frequently, too, we may perceive relations that actually exiſt, but which are foreign to the immediate objects of our reſearches: and the more important the objects are to which they refer, the further they are removed from our original conceptions, the more do they become disfigured by theſe incorrect relations that we have traced between them.

In fact, amid the vaſt variety of productions and phenomena with which the univerſe abounds, the human mind is eager to claſs them, or to diſcover analogies by which they may be connected. Now, it is, in a manner, impoſſible not to find ſome common characteriſtic marks, even among objects that differ moſt eſſentially from each other: of courſe, we cannot fail to recogniſe them among objects that exhibit ſome features of true ſimilitude, but which reſemble each other only in certain points, either of little importance, or altogether foreign to the end that we propoſe to ourſelves from their connection.

The different bodies that preſent themſelves to view are governed by peculiar laws, which enable us to diſtinguiſh and arrange them.—Some among them which diſcover no traces of organization, no ſign of automatical movement reſulting from their peculiar conformation, follow the general motion of the univerſe, and are ſubjected to the common law of attraction, which we regard in this caſe as alone acting upon them.

Other bodies equally inert in appearance are found, however, combined in a regular order which we obſerve with aſtoniſhment; but which ſcience has found means to ſubject to calculation, and which art can imitate and reproduce. Of this deſcription are ſalts and cryſtals, and various mineral ſubſtances, not comprehended under either of theſe heads. Bodies, in this ſtate, which we may regard as a *ſecond* gradation of exiſtence, are impreſſed by the peculiar laws that govern them, with certain uniform characteriſtics by which they may be diſtinguiſhed.

On the ſurface of the earth that we inhabit, and around us, as if to anticipate our wants, grow thoſe innumerable families of plants, the aſpect of which ſerves to charm the eye, while their various products ſupply us with food, clothing, lodging, and the means of employing fire for the common purpoſes of life, and of thus procuring a variety of additional enjoyments. When we examine them attentively, their forms and qualities appear, no doubt, to be widely different: yet certain common properties and general modes of exiſtence connect them; and the abridged deſcriptions that expreſs theſe properties and modes of exiſtence, give the diſtinguiſhing character of what we term the *Vegetable Kingdom;* which forms the *third* gradation of exiſtence.

An organization more or leſs perfect, a ſenſibility more or leſs exquiſite, ſerve to diſtinguiſh animals from each other: but all of them feel, and all are organized ſo as to receive thoſe ſenſations which are ſuitable to their deſtination. Some remain ſtationary in the place which chance aſſigns them, and form only a ſort of living plants. Others are endowed with locomotive power, and may diſplay their activity and ſatisfy their wants in different parts of the earth or ocean. Theſe latter poſſeſs, in ſome meaſure, a higher degree of animal life; for this ſingle circumſtance multiplies both their deſires and the means of gratifying them. All theſe beings, ſo different from each other, are found to poſſeſs a common faculty, capable of refinement, in proportion to the greater or leſs delicacy of the organs by which it is exerciſed, and of enlargement, in proportion to the greater or leſs number of the objects to which the appetites of the individual or ſpecies are directed; but which, however, eſtabliſhes a general connection between all ſenſitive beings, and at the ſame time, ſeparates them by a diſtinct line of demarcation from all thoſe not endowed with feeling.

This conſtitutes the *fourth* and laſt gradation of exiſtence, at leaſt with reſpect to us, who do not behold, and who conſequently cannot figure to ourſelves, any ſyſtem of more complicated organization from which new properties might reſult. Accordingly, we are reduced to the neceſſity of attributing the qualities of the beings known to us from obſervation, to thoſe which our imagination pictures to itſelf, as placed in other worlds reſembling our own, or diffuſed, like a vivifying power, through all the infinity of ſpace.

To theſe different laws, which govern all the beings with which man is acquainted, we muſt add thoſe of the decompoſition of bodies, either as produced by nature, or imitated by art, or of which invention ſupplies the means;—laws, which, no doubt, comprehend all thoſe relating to the reſults, or to the new ſubſtances obtained by this decompoſition.

It is far from improbable, that the new bodies and properties produced in theſe laſt-mentioned inſtances, might, according to the invariable laws of matter, be referred to ſome one or other of the four preceding gradations of exiſtence; and we may hope to be able one day to aſſign them their proper place. But ſeveral important queſtions muſt be firſt reſolved, and, perhaps, ſome great diſcovery muſt have furniſhed us with new inſtruments of chemical reſearch, before we ſhall be able to refer the phenomena of the compoſition and decompoſition of bodies to the general laws of phyſics.

Thus, from inanimate to animated matter, from the inert clod in the bowels of the earth, to the being who feels, and who becomes ſuſceptible of moral affections and of thought, every thing is linked and connected together: but the lines of ſeparation ſeem to be traced by Nature herſelf; and ſyſtematical arrangement, while it determines them, only confirms the real diſtinctions, that may be obſerved to ſubſiſt between the majority of the objects which they ſeparate.

We muſt, however, remark, that the diſtinctive characters of each claſs are found to apply, in ſome reſpects, to the claſs that immediately precedes or follows it. Thus, cryſtallizable bodies exhibit phenomena peculiar to themſelves, and which are perfectly diſtinct from thoſe of irregular maſſes of matter; but at the ſame time, they are ſubjected to the general laws of phyſics by their properties of extenſion, gravity, &c. Vegetables, on the other hand, ſeem to reſemble the claſs of cryſtallizable bodies, in ſeveral particulars, while, in others, they approach to the nature of living and ſenſitive beings; and the latter, while they riſe by degrees to the utmoſt perfection of their claſs, can ſcarcely be diſtinguiſhed, in their inferior ſpecies, from ſome of the vegetable tribe.

In the claſs of animals, and, particularly, in the human ſpecies which is placed at their head, we obſerve a ſeries of phenomena common to all the other claſſes.

Some operations of the animal economy are to be referred, at leaſt, in certain points of view, to the laws of ſimple mechanics; while others are the neceſſary conſequence of the particular ſtructure and mutual relations of the organs: there are ſome, too, that reſult from the laws to which fluids are ſubjected in a given apparatus of tubes;

others that are purely chemical; and others, in fine, that are to be excluſively referred to the ſenſibility of the ſyſtem.

In locomotion, and in all the actions that concur to produce it, the power of the muſcles is exerted in the ſame manner, and according to the ſame laws, as that of different ſorts of levers, which they reſemble in ſeveral particulars; and its operation is eſtimated in the ſame way as that of any other moving power, provided the circumſtances of this operation, the nature of the reſiſtance, and the weight to be raiſed, be well known. The formation of the bones, and of ſome morbid concretions, ſeems to be referable to the proceſs of cryſtallization, if we take this word in its moſt general and extenſive meaning.

It is not without ſome appearance of reaſon, that the moſt attentive obſervers have applied the term *fungus* (*végétation charnue*) to certain animal excreſcences, devoid of ſenſibility, which ſeem to be engendered and nouriſhed in living bodies after the manner of pariſitical plants. Some, even, have regarded the formation and maintenance of the fetus *in utero*, as a ſort of vegetation, it being ſupported by the juices which it imbibes by its *roots*, or the veins of the placenta, till more enlarged and varied wants have developed its appetites, its taſtes, and its paſſions. It only becomes, they affirm, a real animal, when it experiences diſtinct deſires; when it is capable of combining the ſenſations that depend upon theſe deſires themſelves, or upon the means of ſatisfying them; when it thinks, judges, wills: till this takes place, its whole exiſtence is limited to the inſtinct that renders the application of the nutritive juices neceſſary. Although in this inſtance, the analogy is, no doubt, too far ſtrained, yet it is not altogether unreaſonable to ſuppoſe, that this firſt ſtage of animal life reſembles, in many reſpects, the permanent ſtate of vegetable exiſtence.

To conclude: certain decompoſitions that are conſtantly taking place in the animal economy; the diſengagement or formation of certain aëriform fluids; the neutralization of certain ſubſtances and the effervefcences that accompany it; the mode in which the food and different combinations of medicines operate; all theſe phenomena, I repeat, really belong to chemiſtry; and although, in general, they ſeldom take place but in the ſtomach and inteſtinal canal, or in certain parts which receive, either from nature or accident, only a ſmall degree of vital energy, yet they have ſerved to ſuggeſt ſeveral uſeful views to practitioners, but not (hitherto at leaſt) to furniſh a ſolid baſis for the principles of a chemical ſyſtem of medicine.

Theſe obſervations ſerve for anſwer to the firſt queſtion which we have ſuggeſted. The different characters that are blended in the greater part of the phenomena of the animal economy are ſufficient to explain, and even, perhaps, in ſome meaſure to apologize for the prevalence of ſo many hypothetical opinions which might all claim the teſtimony of ſome facts in their favour*. For mankind have not erred ſo frequently, and in ſo fatal a manner, without being able to colour their errors with ſome plauſible pretexts. The moſt abſurd opinions commonly ſpring from the abuſe of a few incontrovertible facts; and the groſſeſt errors frequently depend upon certain acknowledged truths, to which a ſtrained meaning has been given, and of which an improper application has been made.

With reſpect to the latter queſtion, or the inquiry, how it happens, that very erroneous theoriſts have frequently proved very ſkilful practitioners, the anſwer is alſo to be deduced from the nature of the ſubjects which the ſcience of medicine embraces, and from the method of procedure which is moſt familiar to our mind. Perhaps, too, this remarkable phenomenon may be referred to certain habits of philoſophical reaſoning, which thoſe phyſicians, who are endowed with any portion of good ſenſe, are, if we may uſe the expreſſion, compelled to contract in the practice of their art:—habits which may be obſerved in men of very inferior talents in other reſpects, and which are felt to be uſeful even by thoſe whoſe imagination has been moſt egregiouſly deluded. In fact, it ſeems ſcarcely poſſible to be conſtantly engaged in the contemplation of animated nature in all its different points of view; to behold the production of ſo many phenomena; to inveſtigate the nature of the phyſical and moral conſtitution, in its tranſitions from health to diſeaſe, from life to death, without acquiring more juſt ideas of the nature of man, of his faculties, of their employment, and of the true end of his exiſtence. In ſtudying with attention all the characteriſtic features that diſtinguiſh his different conditions, how many obſervations occur, which afterwards oppoſe an inſurmountable barrier to the inroads of prejudice! How many intereſting objects preſent themſelves for the gratification of our curioſity, which is both quickened and regulated by their contemplation! How many views unfold themſelves, that ſhow men and things as they are, to the leaſt penetrating obſerver!

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* Hence the obſervation of the ancients, that the human body is, as it were, a world in miniature, which affords ſpecimens or models of all that paſſes in the great world.

In the firſt place, every diſeaſe, when reduced to the form of a problem that we endeavour to ſolve, or of an enigma that we attempt to explain,

plain, contains, no doubt, within itſelf, the data of its method of cure. Theſe data conſiſt in the character, number, and reciprocal influence of its ſymptoms. In order, therefore, to attain the greateſt degree of certainty, facility, and readineſs, this method ſhould bear a ſtrict reference to them. We muſt not, however, imagine, as I have elſewhere obſerved *, that we can effect a cure only by a ſingle plan of treatment. In all probability, there is one for each particular caſe, which is preferable to all others; and the ſkill of the true phyſician is ſhewn by approaching as near to it as the nature of things and the imperfections of our intellectual powers will permit: but different, or even contrary methods, at leaſt according to common opinion, may conduct us to the ſame end, that is, to the cure: and, as it is almoſt always impoſſible to eſtimate the dangers of the plan which has been purſued with ſucceſs, the phyſician and the patient remain in general convinced, that it is the moſt perfect one. I have alſo ſhewn, that there are not ſo many inconveniences attending this mode of thinking and judging, as one, at firſt ſight, might be led to ſuppoſe.

Secondly, ſeveral able practitioners, ſuch as Sydenham, although under the influence of erroneous

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* See the work, entitled, "On the degree of certainty to be aſcribed to Medicine."

neous theories, had yet the prudence to make no dangerous application of them. At the ſame time that they confided in their juſtneſs, they did not go beyond the facts which had ſuggeſted them; and in their treatment of diſeaſes they never regarded them as certain rules for procedure in new and unprecedented caſes. Hence, their ſyſtematic errors were attended with ſcarcely any bad practical conſequences. They conducted themſelves nearly in the ſame way as they would have done, if they had adopted no hypotheſis whatever reſpecting the principles of their art.

In fact, between the rational empiric who does not go beyond the reaſonings directly deducible from obſervation, and the theoriſt who applies his ſpeculations only to phenomena ſimilar in every reſpect to thoſe upon the accurate analyſis of which he has founded it, there is really no difference. Both placed in ſimilar circumſtances would follow preciſely the ſame plan; that is, the plan which experience had ſhewn them to be uſeful: and if, after all, their practice ſhould differ, this would not happen, on account of theory being adopted by the one phyſician, and rejected by the other; but ſolely in conſequence of the diverſity of the curative methods which had guided their experiments. Thus, the errors of the theoriſt, who would cautiouſly confine himſelf within theſe limits, would be errors only for the perſons who might think proper to adopt them after him; and who, not being actuated by the ſame views, could ſcarcely be expected to reſtrict, in a proper manner, the practical application of his principles. For the followers of a ſect are always much more inclined than the inventors themſelves to puſh their ſyſtematic opinions to the moſt abſurd extreme. Leibnitz, in the ſociety of his intimate friends, uſed ſometimes to laugh at his *monads* and *pre-eſtabliſhed harmony*. Wolff, on the contrary, was very far from laughing at them. Stahl ridiculed pretty freely the ill-judged applications, that ſeveral of diſciples had made of his ſyſtem; and admired them for being more complete Stahlians than himſelf. To them, however, nothing was more galling than the jeſts of their maſter, which hurt their feelings, but did not abate their faith: and they piouſly endeavoured to conceal them, as the children of Noah went backward to cover the nakedneſs of their father.

SECTION XI.

Has the Application of a more rigorous Philoſophical Method to Medicine tended to deprive the Science of any real Advantages?

Such is the progreſs which the philoſophy of medicine has made. It has overthrown the greater part of the theories that prevailed, and caſt a degree of ridicule upon the reſt; and the obſervations, or facts relating to each branch of the art, are, in a manner, all that has ſurvived this general convulſion.

But, by defining the province of medicine, and reducing it apparently within very narrow limits, it may, perhaps, be queſtioned, whether the employment of philoſophical methods have not injured the intereſts of the ſcience itſelf: whether paſt opinions have not been cenſured from pride, rejected from vanity, or ſuppreſſed from diſguſt: and whether this great revolution, like the majority of thoſe which have preceded it, may not proceed entirely from the reſtleſs love of novelty, the ignoble deſire of annihilating the labours of our predeceſſors, and that turbulent ſpirit of activity which is inceſſantly leading men to innovations in the general conduct of affairs.

But it is ſurely very abſurd, to regard the reform of ſcience as an injury done to ſcience itſelf, and the rejection of hypotheſis, as a ſubverſion of principle. General views ſhould be deduced from facts. If they flow naturally from the latter, we ſhall be able to recogniſe their propriety as well as thoſe who firſt drew them from theſe facts: and we ſhall be the more ſure of their juſtneſs, as no private intereſt leads us to prefer one opinion to another; and as we are diſpoſed to receive the views which may afterwards occur, and of which we are ignorant, with the ſame eagerneſs that we adopt thoſe which have been tranſmitted to us by our predeceſſors. In the preſent age, it is no longer in the defence of this or that opinion, that men of learning ſuppoſe their glory to conſiſt:—but in giving proofs of good ſenſe, in ardently ſearching after truth, and in frankly acknowledging their miſtakes. To have arrived at this point, is to have made no ſmall progreſs in knowledge.

Men of true philoſophy, employed, as they are, in augmenting and confirming the real enjoyments of life, are always, beforehand, perfectly indifferent about the reſults of their inquiries. For of what conſequence can it be to them, whether or not theſe reſults accord with received opinions? Their ſole care is to aſcertain their correctneſs; and this diſpoſition of mind is ſtill further ſtrengthened by the character of the prevailing methods of reſearch, which, far from favouring the pretenſions of vanity, are daily abridging its influence, by reducing the greater part of the ſtudies from which ſociety derives moſt honour and advantage to proceſſes little more than mechanical.

Deſcartes, when he projected the reform of opinions, required, as an indiſpenſable preliminary, that all thoſe which were already current, ſhould be conſidered as non-exiſtent. He was deſirous that their ſoundneſs ſhould be determined by a new examination; and was even anxious that this examination ſhould be more ſevere than before, as the habit of believing is with us generally equivalent to demonſtration. The weak minds of the age were alarmed at this plan of reform. They imagined, that nothing ſhort of the ſubverſion of the foundations of human reaſon was aimed at. A very vain alarm, it muſt be confeſſed, as if the diſcuſſion of ſuch a queſtion could have been a juſt object of dread to any thing but error! and as if truth did not always appear more pure and attractive, after ſuch an enquiry! It is its imperfect inveſtigation alone, that deranges our ideas, and cauſes the mind to waver inceſſantly between ſcepticiſm and dogmatiſm: A good analytical method prevents us, it is true, from purſuing many uſeleſs reſearches;

ſearches; for, with the light which it affords, we have no difficulty in diſtinguiſhing thoſe ſubjects which we ſhall never be able to elucidate by our inquiries: but, on the other hand, it places in a clearer point of view the truths which we obtain, and impreſſes them more firmly on the mind; and it is by ſuch a method alone, that we are enabled to anticipate the means, by which future diſcoveries may be made and confirmed.

In medicine, as in other ſciences, by repeating the examination of facts and opinions, we not only do not riſk the loſs of any known truths, but we neceſſarily diſcover many more that are involved in the obſervations already made, and the exiſtence of which we, perhaps, did not even ſuſpect. The real treaſures of ſcience conſiſt in permanent and univerſally acknowledged truths, and not in the pomp and parade of ſyſtems; and are to be eſtimated by the accuracy, and not by the number or apparent extenſiveneſs of our ideas. Even, when the methods of inveſtigation are perfectly ſure, we cannot too frequently repeat their application to the ſame objects. It is in this way that our acquirements gradually become more correct:—and nothing, certainly, would be more uſeful, than the occaſional reviſal of thoſe particulars of our knowledge even, which leave no traces of uncertainty in the mind.

SECTION XII.

What remains to be done for promoting the Reform of Medical Science?

But in what manner are we to proceed in medicine with this reviſal of our acquirements, or rather (ſuppoſing it to take place at a time when all conjectural ſyſtems ſhall be irrevocably baniſhed from the ſcience), in what manner are we to re-organize that maſs of obſervations and experiments, of which theſe ſyſtems ſucceſſively formed the baſis, or centre of union, but which now remain ſcattered and deprived of any common tie?

All the ſciences of obſervation are compoſed of facts, and each is diſtinguiſhed by the general nature of thoſe that belong to it. Human induſtry obſerves and collects theſe facts, and at times produces them by art: and reaſoning connects them, ſometimes, according to the order in which they preſent themſelves, at other times, according to the order which ſeems beſt calculated for diſtinguiſhing their different relations. It claſſes them, unites them, or contraſts them, and determines their general or particular relations, according to their immediate importance, or according to the importance of the conſequences that flow from theſe relations, and of the ſubſequent views which they ſuggeſt.

Such is the progreſs of the mind, when we proceed in the proper path; and ſuch is the path which we muſt always endeavour to follow. The theoretic branch of a ſcience, therefore, ſhould conſiſt of the mere expoſition of the connection, claſſification, and relations of all the facts of which this ſcience is compoſed: it ſhould form, as it were, their ſummary. If theory be not ſtrictly confined within theſe narrow limits, it is no longer a ſyſtematic view of real objects, that it preſents; but an aſſemblage of reſults unconnected with facts, and of vain illuſions altogether devoid of foundation.

When we take a general ſurvey of the obſervations in medicine that have been collected, down to the preſent time, the mind finds itſelf loſt in their number and diverſity. What, then, remains to be done? Unqueſtionably that which a perſon does who is placed amid a number of confuſed objects, and who is charged with the taſk of claſſing and diſtinguiſhing them, by ſhewing, in the very order of their diſtribution, the relations that may be obſerved to ſubſiſt between them.

In the firſt place, this perſon would mark the principal characteriſtic differences, thoſe which are the moſt indiſputable, and, at the ſame time, the moſt eaſy of obſervation; and theſe would afford him the firſt means of diviſion. Afterwards, he would return to each of theſe general claſſes, and by conſidering more attentively the objects which they comprehend, he would perceive ſome other differences among them, leſs obvious, but at the ſame time ſufficiently diſtinct; which would ſerve him for the grounds of his ſecondary diviſions. Thus, he would gradually proceed, claſſing, dividing, and ſubdividing, till he had aſſigned to every object its appropriate place.

It is, however, neceſſary to obſerve, that this place may be very different according to the nature of the end we propoſe to ourſelves from ſuch a claſſification. The ſame objects are not regarded in the ſame point of view in all the different ſciences: in each, therefore, they may be found to poſſeſs, and, in reality, they do poſſeſs, among themſelves, various ſpecific relations; and, conſequently, although the general method of claſſification be always the ſame, each particular claſſification muſt preſent differences in the order and connection of the objects.

To give an account of this order and connection; to explain and develope its principles; to point out all the relations of the objects or facts compriſed in the ſyſtem; to deduce from theſe relations all the conſequences that may be directly obtained from them;—ſuch has been the object of the labours of a few enlightened men in diſferent departments of human knowledge; and ſuch is the ſum of what remains to be accompliſhed in medicine. In this manner, the ſciences, or, at leaſt, the works calculated to exhibit the moſt faithful picture of them, would be reduced, on the one hand, to complete and well digeſted collections of obſervations; and, on the other, to ſhort theoretic expoſitions, in which mention would be made, in the firſt place, of the deſign with which theſe collections were, and ought to be, formed; and, ſecondly, of the direct concluſions that may be drawn from the different obſervations they contain.

Pringle uſed to obſerve, that, from the Greeks down to the preſent time, medicine was a ſcience in which there was a great deal of reaſoning upon a ſmall number of facts; and that in future, on the contrary, there ought to be little reaſoning upon a great number of facts. According to this method of reforming our ſcience, the only one of which it is yet ſuſceptible, the wiſh of this reſpectable empiric would be realized. We muſt have no more hypothetical views, no more fanciful ſyſtems: for it cannot be expected, that thoſe theoretical opinions, which are not the evident and incontrovertible reſult of obſervations and experiments, will be retained in conjunction with the ſyſtematic expoſition of theſe obſervations and experiments.

periments. Beſides, would not this rejection prove the means of reſtoring and eſtabliſhing harmony between the two principal ſects which have divided the medical world from its infancy? Would not the more diſcerning minds of both parties recogniſe, in ſuch an expoſition, every thing which they agree in requiring in a good ſyſtem, and none of thoſe faults of which they mutually accuſe each other?

It may, perhaps, be objected, that this would be, in ſome meaſure, to clip the wings of genius, and to reduce it to the ſervile employment of imitator, or compoſer of dry and unintereſting tables? But, in the firſt place, I am doubtful, whether in thoſe ſciences which moſt eſpecially require attention and accuracy, it be ſo requiſite to give what is termed *wings to genius*, or whether, as has been obſerved by a man * who can hardly be accuſed of timidity, it would not be better to add lead to its feet?

Beſides, we may be aſſured, that genius and zeal will find ſufficient ſcope for exertion in the accompliſhment of this great reform; or, rather, the career which is opened before them is entirely new, and, in a manner, unlimited; and, afterwards, it will be almoſt impoſſible to fall into any very dangerous miſtakes. Twenty or thirty years would now be ſufficient for verifying the obſervations that have been collected, (except, perhaps, thoſe which relate to epidemical diſeaſes): the ſame ſpace of time would ſuffice for the repetition of all the different experiments that have been made, and for confirming the accuracy of the reſults.

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* Lord Bacon.

After this firſt taſk ſhall have been accompliſhed, it will only remain to improve the practical methods. They will already have received many important improvements from theſe obſervations and experiments themſelves. In the courſe of time, they will derive, from philoſophy, all the exactneſs of which they are ſuſceptible. All the intereſting problems will at length be ſolved; and medicine will be placed on a level with the other ſciences, in point of certainty; ſuperior as it is, perhaps, to all of them, from the ſubject of its ſtudies, and from the high importance of the different ends which it has in view.

SECTION XIII.

A more detailed Expoſition of the Proceſſes of Philoſophical Analyſis, as applied to Medicine.

But the mode of applying the method of philoſophical analyſis to objects ſo numerous and ſo various, as thoſe which medicine embraces, cannot be ſufficiently illuſtrated, by ſo general a view of the ſubject: it may, therefore, be neceſſary to enter into ſome further details.

To whatever branch of inquiry it be applied, the analytical method is always fundamentally the ſame. However, as we may conſider the objects of reſearch under different points of view, and may conſequently diſcover relations of different kinds among them, the proceſſes by which we recogniſe theſe relations preſent certain differences connected with the nature of our reſearches, the end to which they are directed, and the character of the ideas which they tend to ſuggeſt. Thus, for example, we may conſider a body merely with reſpect to its magnitude, to its form, to the reciprocal relations of its different parts, to its ſituation with regard to one or ſeveral other bodies, and to the natural analogies or differences between them. The object of the analytical method, in ſuch a caſe, is merely to *deſcribe* this body with exactneſs, and to aſſign to it the place it ſhould occupy, in relation to the objects which we view in conjunction with it.—This, therefore, may be called the *deſcriptive method of inveſtigation.*

If our inquiries be not confined to theſe external qualities, to theſe relations of place; if we be deſirous to become acquainted with the elements of which any body is compoſed; that is, with thoſe particles of matter, by the intimate union of which it its formed; and if we ſeparate its conſtituents in order to examine the nature of each, or, at leaſt, the characters by which they are diſtinguiſhed; the reſult of the inveſtigation is no longer a ſimple deſcription of the body. In order to ſtudy it in this point of view, we muſt decompoſe it; and, if we ſucceed in recompoſing it, or in combining anew the different conſtituent parts which we had at firſt ſeparated, the inveſtigation is complete. It was by this method that the modern chemiſts were enabled to accompliſh ſuch feats; and it is it which enſures the glory and certainty of their labours. It may be termed the *method of inveſtigation by analyſis and recompoſition.*

But the objects of our reſearches do not always preſent themſelves to view at one and the ſame time. Frequently it is impoſſible to arreſt them, and inſpect them for any length of time; as in the caſe of phenomena that ſucceed each other, and which may be ſometimes independent of each other, and, at other times, connected in a regular and determinate order. There are alſo certain ſubjects of inveſtigation that can be ſtudied only by the changes which they undergo before the eyes of the obſerver; from which we try to diſcover the preceding alterations they have experienced. In the ſtudy of theſe phenomena, our chief object is to determine whether or not any relations really ſubſiſt between them. In reviewing theſe changes, we endeavour to recogniſe the properties, with which the ſubjects of them have been endowed by nature: and when we have actually collected all the obſervations and experiments neceſſary for effecting either of theſe purpoſes, the reſult is a ſyſtematic hiſtory, in which the ſeries of facts relative to the different ſubjects of inquiry unfolds itſelf in a natural order. This we ſhall term the *hiſtorical method of inveſtigation.*

To conclude:—we may conſider not ſo much the objects themſelves, as the conceptions which we have derived from them. Theſe conceptions may be contemplated in the ſame way as direct ſenſations; that is, if they be ſufficiently diſtinct, we may compare them, aſcertain their relations, determine what new ideas each of them compriſes, and thus deduce a long ſeries of truths that naturally flow from them, and are intimately connected together.

But, in ſuch a caſe, I repeat, it is no longer the direct and material objects of our ſenſations, that form the ſubject of inveſtigation: We now operate upon the products of our own minds, or, rather, upon the ſigns of theſe products, the only means by which we can repreſent them and ſubmit them to examination. When theſe ſigns are well imagined, when they expreſs accurately, and limit with preciſion, their correſponding ideas, we may always aſcertain whether each of them really involve but a ſingle idea, or comprehend ſeveral; we trace with eaſe the order of their connection; we proceed from one concluſion to another with perfect confidence; and as we advance, we may prove all the reſults by demonſtration. Theſe operations of the mind may be included under the name of the *deductive method of inveſtigation.*

We have already obſerved, that the analytical method is always fundamentally the ſame in all its different applications. Of the truth of this remark, we may ſoon be convinced by a more attentive conſideration of the ſubject.

Condillac, in order to convey a clear idea of what he underſtands by the term *analyſis*, gives the inſtance of a perſon who arrives, in the night time, at a country houſe, with the environs of which he is wholly unacquainted.——In the morning, he ſuppoſes that the windows of the apartment occupied by this perſon are ſuddenly opened, and diſcover an extenſive proſpect of beautiful and diverſified ſcenery: but, a moment after, the windows are cloſed; and the ſtranger is again immerſed in total darkneſs. He has, perhaps, taken a rapid ſurvey of all this rich and agreeable landſcape; but certainly he can have acquired but a very indiſtinct idea of the objects of which it is compoſed. If, however, the windows be again opened, and remain ſo for ſome length of time, our obſerver will have an opportunity of renewing his examination of the landſcape. After having received the firſt impreſſion of the whole, his eye begins to diſtinguiſh the ſeveral parts; he examines them ſeparately, compares them, and endeavours to determine their various relations; and afterwards, by combining them in a view which embraces them all at once, he recompoſes the whole picture of which he certainly would have had but a very vague idea, if he had not begun with ſubjecting it to this ſort of diſſection. From this it is evident, that, in theſe ſucceſſive operations, the aim and reſult of which are to give an exact deſcription of the landſcape, there is an *analyſis* and *recompoſition* of the ſubject; that, in the judgements which we form of the relation of the different parts, there are deductions of ideas and certain conſequences that flow from them; finally, that, if the examination of the landſcape be continued long enough to admit of all its parts being illuminated in different ways by the ſun, we obſerve a ſeries of changes in their external appearance, the expoſition of which ſeems to belong to the *hiſtorical method of inveſtigation.*

On the other hand, the hiſtorical and deductive methods exhibit, in the proceſſes of which they ſeverally conſiſt, various circumſtances perfectly analogous or ſimilar to thoſe which more particularly belong to the other branches. For not only in the method by deduction may there be found deſcriptions of particular objects, and decompoſitions and recompoſitions of ideas; but it frequently operates on reſults which the hiſtorical method of inveſtigation is alone capable of affording: and not only may this laſt-mentioned method preſent different deſcriptions and deductions, but it is alſo continually analyſing and recompoſing the objects, or the phenomena and changes, which it endeavours to connect in a natural order, or of which it furniſhes correct repreſentations.

In another paſſage of his works, Condillac gives rather a different view of the proceſs of analyſis. Suppoſe we are deſirous to ſtudy the conſtruction of any machine, for inſtance, of a watch. Of all the different ways of effecting our purpoſe the moſt ſure and ſimple ſeems to be, to take it carefully to pieces; to obſerve attentively the form and other ſenſible qualities of each wheel or part; and afterwards to put theſe different parts again into their proper places, after having duly aſcertained their points of union or contact. When we have gone through all theſe operations in ſuch a manner as to convey to the mind an accurate idea of each part in particular, and of the whole machine in general; we may be ſaid to have acquired a proper knowledge of its conſtruction, and are able to eſtimate, and even to foretell, all its movements.

The reader will eaſily perceive, that we have here deſcribed the method of inveſtigation employed in chemiſtry—the *method of analyſis and recompoſition*, applied, it is true, to the different wheels or other parts of a machine, and not to the minute elements or conſtituent principles of a body. But is it not ſufficiently obvious, that it is the elements of a machine, or the parts of which it conſiſts, that, by their particular ſtructure and combination, render it capable of performing a certain ſeries of movements; in the ſame way that the wheels of a body, conſidered in a chemical point of view (that is, the cauſes which determine its ſpecific properties, and which produce the various phenomena it exhibits when brought into contact with other bodies) are the elements that enter into its compoſition, its conſtituent principles, or the ſimple bodies, which its examination has enabled us to diſcover in it?

To conclude: in ſeveral of his works, and eſpecially, in the *Langue des Calculs*, Condillac maintains, that the proceſs of *analyſis* is only a ſeries of tranſlations of ideas, or of the propoſitions upon which our reſearches turn; that theſe tranſlations enable us to proceed from one identical propoſition to another; that, accordingly, when we make any diſcovery, we neceſſarily deduce it from thoſe which we have already made; and that our ignorance is involved, if we may ſay ſo, in our knowledge; and as, according to Condillac, the perfect identity of the propoſitions or ideas is preſerved in each ſucceſſive tranſlation, and remains the ſame from the firſt to the laſt, he thought himſelf juſtified in laying it down as a principle, that the *known* and *unknown* are one and the ſame thing; a concluſion which, no doubt, appears very ſingular, but which cannot be controverted by thoſe who believe that there is a *perfect identity** in the tranſpoſitions of analyſis, or in the ſucceſſive tranſlations of the propoſitions of which it conſiſts.

This laſt deſcription of analyſis, which we have denominated the *deductive method of inveſtigation*, ſhould be diſplayed and exemplified in every ſyſtem of language. For languages are properly framed, only when this method guides and directs their formation; and can only be applied with certainty to the inveſtigation of truth, when it conſtantly governs their employment. The analyſis of algebra, properly ſpeaking, is merely a particular application of it: but the conſtruction and ſigns of this language are the more perfect, and the operations which are effected by its means the more certain, as it conſiders the objects of reſearch in one ſimple point of view; and as it regards only one ſpecies of relations, the data of which are always invariably determined. If we conſider the manner in which Condillac expreſſes himſelf on this head, in the *Langue des Calculs*, we may be led to think, that he had ended by reducing the whole art of reaſoning to the *method by deduction*, or to that particular mode of reaſoning, which the ancient logicians termed *ſorites*. If this were a proper place for entering into an examination of his arguments, it would not, perhaps, be very difficult to ſhew, that his opinion is far from being devoid of foundation.

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* Which certainly is not exactly the caſe.

SECTION XIV.

Application of theſe Methods of Inveſtigation to the different Objects of Medical Reſearch.

When we delineate or determine the figure of a plant, of its ſtalk, its flowers, its ſeed, and its roots; the ſize and relative ſituation of its parts, and the differences in their colour; in ſhort, all the external circumſtances that diſtinguiſh it; we follow the *deſcriptive method of inveſtigation.*— Several deſcriptions of this nature conjoined, and the compariſon of the different plants, whoſe character they eſtabliſh, enable us to diſcover certain relations between them, by means of which we may arrange them and claſs them in a ſuitable order. In this way we form a ſyſtematic table, in which all the objects are connected by their common character, and thence become readily aſſociated in the mind. But, however extenſive their number may be, ſuch a table is ſtill, in itſelf, nothing more than the product of the deſcriptive method of inveſtigation.

We muſt, however, obſerve, that, to be complete, the botanical deſcription of a plant ſhould include the relation of the different changes it undergoes, or of the different phenomena it exhibits at the different periods of its exiſtence, and that, conſequently, the hiſtorical method of inveſtigation forms part of ſuch a deſcription; in the ſame way that the deſcriptive method is, in its turn, combined with the hiſtorical, when we have to relate the facts from which the properties of a plant are deduced, and with the method of chemical analyſis, when we are deſirous to know the elements of which it is compoſed. I here uſe the term chemical analyſis, in its moſt confined ſenſe; for it is with vegetables as with animals;—we may decompoſe them, but cannot form them anew. We cannot even recompoſe their leaſt important parts:—a proof that there enters ſome unknown element into their compoſition, or that it depends on certain proceſſes of nature, which obſervation has never been able to detect, and which art is utterly incapable of imitating.

A ſyſtematical table, which repreſents to us the form, the colour, and the ſituation of an organ, its relations of vicinity, of diſtance, of reſemblance or difference, with reſpect to other parts: ſuch a table, I repeat, is the product of the deſcriptive method. You point out, for example, the ſituation of a muſcle; you determine its ſize and the ſpace which it occupies, the direction of its fibres, the inſertions of its tendinous extremities; you deſcribe the ſtructure of the heart, and trace the courſe of the veſſels of which it forms the centre;

you demonſtrate the brain and ſpinal marrow; and from thence, as from a common trunk, you follow the courſe of the nerves, and mark their diſtribution in the various organs to which they communicate animation and feeling: ſtill all this is but a ſimple deſcription: and in your proceedings you reſemble the geographer, who contents himſelf with delineating the topography of a country, without reviewing the phyſical changes which it may, in the courſe of time, have experienced, and without relating the political events of which it may have been the ſcene or the revolutions which may have ſucceſſively diſtracted its inhabitants.

But if you attempt to explain the functions of this ſame organ; if you endeavour to determine the movements which this ſame muſcle performs, or thoſe to which it contributes; you then follow the *hiſtorical method of inveſtigation*, and, by its aſſiſtance, you compoſe your table: in the ſame way as when you are deſirous to diſcover what ſimple bodies already known, enter into the compoſition of the part under examination, you can only attain your end by means of the chemical analyſis; and the concluſion to which you are led can be juſt only in as far as it is the direct and neceſſary inference from the facts diſplayed and confirmed by this inveſtigation, and as the reſults of the operations employed are ſummarily expreſſed by it.

A good hiſtorical inveſtigation ſhould carefully and attentively follow the whole ſeries of phenomena or changes which the body under examination exhibits: it ſhould detail them in the order of their ſucceſſion, and ſhould deſcribe them with all the characters by which they are diſtinguiſhed: it ſhould endeavour to diſcover the kind or degree of influence which they exert upon each other, and aſcertain, if poſſible, the principal phenomenon to which all the others may be referred, and on which they all evidently depend.

To be able to give an accurate account of the functions of the ſtomach, it is neceſſary, in the firſt place, to have obſerved, that it receives the food within its cavity; that the nature of the food is there changed, or that when it paſſes out of it, after a certain length of time, it exhibits new characters and properties. Theſe changes bear the name of ſtomachic digeſtion. This digeſtion is, therefore, the peculiar function of the ſtomach: and, if we have aſcertained the conditions requiſite for its due performance, the circumſtances that tend to favour or impede it, the agent or agents that nature ſeems to have particularly deſtined for its accompliſhment, we ſhall have acquired an idea of the functions of this organ, which will be juſt and correct, in proportion as all the principal phenomena, connected with theſe functions, ſhall have been obſerved with more or leſs accuracy.

But whatever uncertainty may attend the inveſtigation of that ſeries of actions which conſtitute the life of animated beings, the ſtudy of thoſe changes which diſeaſe occaſions, is not leſs uncertain, obſcure, and difficult: and as the miſtakes into which we may fall, with regard to their cauſe, that is, to the principal phenomenon on which all the others depend, or by the influence of which they are modified; as theſe miſtakes are ſeldom confined to theory, but, by furniſhing erroneous views of the treatment of diſeaſes, are often productive of the moſt pernicious conſequences in practice: they are certainly of a much more ſerious nature, than errors which relate merely to the ſimple organic functions; as the latter, for the moſt part, ſerve only to furniſh ridiculous explanations of facts, and as the indications of cure, that have been too often raſhly deduced from them, are, in general, much more eaſily corrected.

The hiſtorical inveſtigation of a diſeaſe ſhould be conducted with the greateſt exactneſs; and, in attempting it, we cannot be too careful to diveſt ourſelves of all prejudice, of all conjectural views, and of every idea that is not connected with the phenomena under examination. We muſt obſerve the things that are, and not figure to ourſelves imaginary exiſtences. In reviewing the ſubject, we muſt deſcribe what we have ſeen, without introducing into the relation any of the concluſions or ſuppoſitions we may have thought ourſelves entitled to deduce from it; and the more ſimple and exact the recital is, the more correctly will the order, duration, diſtinctneſs, and other characteriſtics of the ſymptoms be found depicted in it; the more perfect, too, will be the inveſtigation, the more ſolid and ſimple will be the reſults or concluſions it may afford, either directly and by itſelf, or indirectly and by its compariſon with other deſcriptions that have been formed on a ſimilar plan.

Such, in fact, are thoſe admirable hiſtories of particular diſeaſes which Hippocrates has left us, and which the ancients very juſtly termed the "*moſt chaſte contemplation of nature.*" From theſe deſcriptions, which diſplay ſo much accuracy, and which place all the facts in ſo clear a point of view, the genius of Hippocrates found little difficulty in deducing thoſe beautiful and extenſive views reſpecting the influence of the ſeaſons, the variations of the atmoſphere, and the effects of theſe variations on different epidemical diſeaſes, and reſpecting the laws which regulate the courſe of particular diſorders, all arranged in genera and ſpecies, in the ſame way as we diſtinguiſh the external characters, or certain regular ſeries of phenomena, in the different ſpecies of animals and vegetables. Such, too, are the hiſtories of ſome diſeaſes, drawn by the moderns, in a much more imperfect manner, in my opinion, as far as regards their accuracy, and, particularly, as far as regards the art of delineating their moſt characteriſtic, and at the ſame time moſt delicate features; but the peruſal of which is, nevertheleſs, more inſtructive in ſome reſpects, on account of the learned details of curative means they contain. We muſt alſo acknowledge, (what indeed no one can deny) that ſuch of theſe hiſtories as afford the moſt ſolid information to the ſtudent, are thoſe, the authors of which have adhered moſt cloſely to the method of Hippocrates, in the exact and faithful deſcription of the phenomena obſerved: and every one who combines, in any degree, the habit of obſerving diſeaſes with that of reading with reflection, muſt very ſoon perceive, that the ſcenes which nature diſplays to view, are very far from being always the ſame as the imagination depicts them; that we ought to view with miſtruſt the ſyſtems which, at firſt ſight, appear ſo well deviſed and arranged; and that thoſe, the juſtneſs and accuracy of which are moſt unqueſtionable, yet diſcover certain breaks in the concatenation of the objects they embrace; and that, perhaps, there is not a ſingle one, the harmony of which, according to our natural manner of regarding things, is not deranged by ſome apparent irregularity.

The method of chemical analyſis may be applied to all the bodies of nature. Whatever be their characters and properties; in whatever point of view we may otherwiſe chuſe to conſider them, ſtill we may always try to diſcover the elements, by the more or leſs intimate combination of which they have been formed. When, after having effected the decompoſition of a body by this analyſis, we can form it anew in all its parts, by reuniting its products, and placing them in circumſtances favourable to its recompoſition, we may ſay that the analyſis is complete: We know the elements of that body; we know the bodies which have not hitherto been decompoſed, of which it is itſelf a compoſition. The light which this powerful inſtrument, handled, as it has been, in ſo maſterly and ſure a manner, by the French chemiſts, has already reflected upon the operations of nature, and the more brilliant light which it bids fair to diffuſe at no very remote period, will prove a more formidable obſtacle to the machinations of quackery, than all the diſcuſſions of philoſophers, and all the raillery of wits.

But chemical analyſis cannot always attain this ultimate degree of proof. Often, after it has effected the decompoſition of a body, however careful we may have been to collect and to preſerve all the products, it is in vain that we attempt to reunite them. This is found to be the caſe, not only when we operate on organized bodies, or on animal or vegetable ſubſtances; but alſo when we operate on bodies to which life has not imparted its diſtinguiſhing characteriſtics. In theſe unfavourable circumſtances, the reſults of the analyſis are ſupported only by a greater or leſs degree of probability; and though, in ſome inſtances, this probability may be equivalent, if we may ſo expreſs ourſelves, to certainty, yet in the greater number of caſes, time and experience are required for eſtabliſhing the accuracy of the concluſions. This is more particularly the caſe, when theſe concluſions are applied to explain the phenomena of life in all its different degrees, and when they ſuggeſt the employment of certain means of action on the living ſyſtem.

The *method of analyſis and recompoſition* is often guided by the deſcriptive method, or at leaſt, it frequently borrows the materials on which it operates, from it. It may, too, be elucidated, and directed to new diſcoveries by the hiſtorical method; but, in its turn, it often becomes a neceſſary guide to the latter. Finally, it furniſhes the deductive method with more certain grounds of proceeding, and with ſubjects of reaſoning that are eaſily repreſented by clear, ſimple, and preciſe terms.

The *method of deductive inveſtigation*, again, may borrow the ſubjects upon which it operates, from any one of the other methods; and, on the other hand, it may be itſelf combined with their various operations. As it is employed upon ideas, or, rather, upon the ſigns that repreſent them, provided theſe ſigns be well formed, and it deduce merely theoretical concluſions from them, it proceeds with perfect certainty; and that, too, neceſſarily: for the ſigns of ideas repreſent, of courſe, only ſuch conceptions as are included in them; and if they be exact and regular, they will recall them diſtinctly, and circumſcribe them with preciſion.

This method of inveſtigation has for its object to diſcover, if one idea be involved in another, and, by a ſeries of tranſlations and reaſonings, to arrive at concluſions, the firſt idea, or original form of which did not enable us to aſcertain their certainty, or even to give us the moſt diſtant notion of their acquirement. Ideologiſts very aptly compare theſe ſucceſſive evolutions of ideas to a number of little boxes incloſed within one another, and the firſt link of the chain of reaſoning to the principal box that contains all the reſt. You open this, and draw out of it the ſecond; from the ſecond you extract the third, and ſo on;

till the minuteneſs of the remaining ones prevent you from eaſily laying hold of them. Condillac has made uſe of the ſame compariſon, which proves, that, regarding all the proceſſes of analyſis as belonging to one and the ſame method, he deſcribed it in different points of view, according to the objects to which it is applied, or according to the various lights in which we may deſire to conſider them.

We have juſt obſerved, that the deductive method of inveſtigation, when its language is exact and regular, and when it does not exceed the bounds of theory, is able to proceed in a ſure path, and to impart to its concluſions a perfect certainty. This certainty, however, relates only to the received acceptation of the firſt idea from which we proceed, or of the ſigns that repreſent it, and which form the firſt link of the chain of reaſoning: for if the ſubject of this idea be imperfectly or vaguely expreſſed, the ſeries of reaſonings with reſpect to it may be complete, and yet the concluſions will be found to be extremely erroneous. Hence, the operations of the deductive method of inveſtigation, when applied to quantity or magnitudes, (which are always capable of being reduced to quantity) are wholly exempt from errors. The ſigns which they adopt have ſuch a degree of preciſion, that all confuſion of terms is neceſſarily excluded. The ideas, which theſe ſigns repreſent, refer to ſimple objects, which can be conſidered only in one point of view; and of which we muſt give either a juſt repreſentation, or none at all. To conclude: the objects of theſe ideas reſult ſolely from the operations of the mind, and are identified with the ideas and the ſigns that expreſs them and determine their relations. When we are able to circumſcribe, with the ſame preciſion, the other objects of our reſearches, and to give to the language employed in their ſtudy, or in the delivery of the ideas it affords, the ſame degree of clearneſs and exactneſs, the certainty of our concluſions is as complete as in the inveſtigations which relate to the properties of numbers or magnitudes.

But, from the very nature of our intellectual conſtitution, from the nature of our wants, and of the connections which our peculiar mode of perception eſtabliſhes between us and external objects, this complete certainty, in whatever way it be obtained, can exiſt only with reſpect to purely theoretical views. The moment that we attempt any practical application of our knowledge, we are guided only by certain conjectures, founded upon more or leſs ſolid data, and are reſtricted in our reaſonings to calculations of mere probability.

The calculations of probabilities, are, in general, of two different kinds. Sometimes, the truth lies between two known extremes, it may be ſituated in all the points of the intermediate ſpace: but it is neceſſarily contained within theſe limits; and we may often approach to its diſcovery by certain methods which tend to circumſcribe the field of uncertainty, although, otherwiſe, it may ſtill be impoſſible to arrive at any very preciſe concluſions. At other times, the calculation collects the more or leſs numerous or convincing arguments in ſupport of ſome particular opinion or concluſion; and, after their ſtrict examination, we become more or leſs entitled to conſider this concluſion or opinion as the truth.

When Archimedes, wiſhing to determine the ratio of the diameter of the circle to its circumference, gave the proportion of 7 to 22, he was ſufficiently aware, that this ratio was only an approximation to the truth. Metius, by giving the ratio of 113 to 355, leſſened conſiderably its uncertainty. Finally, Wolff and Ludolph Van Ceulen have approached nearer to the exact definition; and others may come nearer ſtill, without any one ever being able to reach it. This, then, may ſerve as an inſtance of the firſt ſpecies of calculation.

To give an example of the ſecond: we have no certain proof that the ſun will riſe to-morrow, or that the enſuing night, like thoſe that have preceded it, will be followed by day. Nobody, however, can entertain any doubts on this point; and we look forward to the day-light of to-morrow, with ſuch perfect confidence, that all the arrangements of our life are governed by this expectation. In what manner, we may aſk, is this belief ſo firmly eſtabliſhed in our mind? Does it not entirely depend upon experience, upon that multitude of facts which teſtify, that, in the revolutions of the heavenly bodies, a certain order prevails; and that the phenomena which they have ſo long continued to exhibit, muſt continue to manifeſt themſelves in future? Every year, every month, and every day, adds to this probability. The man who ſaw the ſun riſe for the firſt time, if he had no previous notion of the courſe of this planet, would certainly have little reaſon to think, that it was about to aſcend to the higheſt point of the heavens; and when, in the evening, he obſerved it diſappear in the ocean, he would have as little cauſe to believe, that it was ever again to return. But when the experience of ages has proved to us, that this order is invariable; when all the memorials and traditions of paſt ages atteſt, that it has never been interverted, we can entertain no doubt of its future continuance: and the more the facts that compoſe the proofs of this order are multiplied, the more convincing does our experience become, and the more certain the concluſions which we deduce from it appear.

The former ſpecies of calculation relates to very ſimple ſubjects: the data upon which it is founded are preciſe and determinate: and it refers to matters of pure theory. The latter relates to an event, eaſy to obſerve, accompanied by a ſmall number of circumſtances ſubject to little variation, and with reſpect to which the concluſions are liable to no ambiguity in their principles. But it frequently happens, eſpecially when the problem refers to the practical employment of our acquirements, that the data of the calculation are very numerous and various: we find it a very difficult matter to collect them, and to aſcertain their comparative importance, or to expreſs them by determinate quantities: in particular, we find it very difficult to diſcover, whether we have really fulfilled this condition; and, in ſuch caſes, the interval between us and the truth becomes more conſiderable, or, in other words, the probability that we have attained is weaker.

Of this we may take examples from the ſcience of medicine itſelf; and, in particular, from the practical part of it, in which the objects are both more numerous and more liable to variation, and in which we conſequently experience the greateſt difficulties in collecting and determining, with preciſion, the different data of our calculations.

When it was firſt obſerved, that Peruvian bark cured intermittent fever; this effect, after having been well aſcertained in a certain number of caſes, was undoubtedly a very brilliant diſcovery; and there was reaſon to think, that medicine had made a very important acquiſition.—But in every new caſe, in which its employment appeared to be indicated, a prudent phyſician had to weigh carefully thoſe circumſtances which might oppoſe its exhibition, or the preſence of which might, at leaſt, conſiderably modify its action. The age, the temperament, the previous habit of body of the patient, the ſeaſon of the year, the nature of the prevailing epidemic, would render the arguments in favour of its adminiſtration, and the hopes of its efficacy, ſtill more equivocal. For numberleſs obſervations and experiments are required for determining, with ſufficient certainty, in what circumſtances it is always beneficial; in what other circumſtances it may prove injurious; what are the combinations with other remedies, or the modifications which its employment frequently demands: and when all theſe queſtions have been ſolved, and all theſe difficulties conquered, the uſe of bark, in every particular caſe, muſt be decided by a quick and nice calculation; which ſhould recall to the mind all the important reſults of former obſervations and experiments, and from the compariſon of the latter with the different circumſtances in the ſtate of the patient, ſhould enable us to diſcover the particular indication of the remedy, and the proper mode of its employment.

Ipecacuanha provokes vomiting, and jalap purges. We have the more reaſon to aſcribe to them theſe properties, as we have had more frequent occaſion to obſerve their effects; and we have the leſs reaſon to doubt the emetic powers of the one, and the cathartic virtues of the other, in the new caſes in which they may be employed, as theſe caſes are found to exhibit fewer peculiarities, either ſimilar or analogous to thoſe which, after a certain number of well-eſtabliſhed trials, muſt be regarded as capable of impeding the action of the remedies in queſtion.

When we deſire to determine the doſe of thoſe medicines, that are indicated by the character of the diſeaſe: when we wiſh, for example, to determine the quantity of blood which it is adviſable to abſtract in an inflammatory affection, the age, the temperament, the ſtrength of the patient, the ſeat or violence of the inflammation, the ſeaſon of the year, the general tendency of the diſeaſes prevalent at the time to terminate by ſuch or ſuch a criſis; all theſe circumſtances, weighed and compared together, ſhould give for reſult the quantity ſought for; which, however, we are able to aſcertain only by approximation. When we are deſirous to determine the doſe of an emetic, or of a cathartic, it is between two extremes, from *plus* to *minus*, that this doſe is to be diſcovered. The latter extreme, will expreſs the mark below which the remedy has no effect whatever ; and the former will indicate the limits beyond which it has been never employed without inconvenience. In this latitude, the deſired-for meaſure is neceſſarily placed ; and we ſhall approach the nearer to it, in proportion as all the particular circumſtances, which may produce a variation of it, in the caſe in queſtion, ſhall have been aſcertained with greater care and preciſion.

I will not, however, extend the inveſtigation of this important point any further, as I wiſh to confine myſelf to general principles, and do not propoſe to deliver a complete collection of rules for the ſtudy of medicine. The ſubject, no doubt, is well worthy the attention of the moſt enlightened inquirers ; but no one can diſcuſs it in a curſory, and, as it were, caſual manner. We muſt, in particular, guard againſt the belief that we have effected our object, or even underſtood all its importance and extent, when, for this method, there is given a ſyſtematic catalogue of books, like that which we owe to the learning of Boerhaave, and of his commentator, Haller *.

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* See note [K].

SECTION XV.

Of the Application of the Analytical Method to the Buſineſs of Medical Education.

It is ſufficiently evident, that the views which ſhould direct the reform of medical ſcience are the ſame with thoſe which muſt govern and regulate its inſtruction. They alone can ſupply a good plan of education, and a good ſyſtem of lectures in every branch of it. One very eſſential point to be attended to, is always to preſent to the pupil the objects in their moſt natural order, that is, to begin with the firſt or moſt eaſily known, and, by their aſſiſtance, ſlowly and gradually to proceed to thoſe which require more profound attention, more ſkilful examination, or, perhaps, even new methods of reſearch. It ought to be the ſtudy of the teacher, to develope the ideas of his ſcholar, in the order of their formation, or in the ſame order in which the objects conjunctly, and their parts in detail, are preſented to our view. And the pupil, in particular, after having ſeized the chain that unites them, muſt review it from the firſt to the laſt link, taking care not to paſs over any of the intermediate ideas which the mind does not directly, and, as it were, neceſſarily ſuggeſt.

Since young phyſicians receive their proper education, not by reading, but at the bedſide of patients; not from the dull rules of a ſchool, but in the preſence of nature herſelf,—in other words, from the inſpection of the various ſubjects of their future labours; the influence of the maſter is chiefly evinced in the method of obſervation which he recommends to them; in the manner in which he himſelf conſiders the ſubjects along with them; in which he teaches them to inveſtigate nature, and in which he directs their attention and firſt practical efforts. The profeſſor, from his chair, delivers, often in vain, the moſt intereſting truths, in the beſt language: The minds of his hearers, abſorbed in paſſive attention, retain but a faint recollection of his precepts. But thoſe which they have formed to themſelves under his guidance, thoſe which they have diſcovered and recogniſed by a ſeries of active aſſociations, will remain for ever impreſſed on their memory. By theſe means their acquiſitions become not only more durable and ſubſtantial, but they have alſo ſome degree of originality, and are more analogous to the turn of mind peculiar to each individual; and the practice of deducing them always from the objects themſelves, excites an averſion to every other mode of obtaining them.

We muſt not, however, run into the oppoſite extreme, and carry the practice of this method to pedantry; for though it is, no doubt, the beſt and ſureſt way of forming our ideas, yet it is not the only one. Very often it happens, that we receive our ſenſations by chance; the ſcattered ideas which reſult from them are confuſedly impreſſed on the memory, and remain dormant, till analogous ſenſations occur, which revive them and become aſſociated with them, and till both become connected in more or leſs general, and more or leſs regular claſſes. Then commences the labour of ſubjecting to examination this arrangement, which is often, at firſt, entirely accidental; and it is then only that men of genius, by ſtrictly inveſtigating all their particular ideas ſeparately, are able to determine their natural order, and the place which this order aſſigns to them; and conclude by reſolving them all into a few general principles that ſerve as a common centre of union.

Beſides, if, in conducting the buſineſs of education, it is generally found advantageous to begin with facts, and to proceed by degrees to concluſions: it is alſo ſometimes expedient, firſt to deliver the concluſions, and to confirm them by the indication of the principal facts; reſerving it in our power, to return to the latter, in order to explain them in detail, when it is neceſſary to demonſtrate the propoſition more methodically. For, independently of the inevitable loſs of time, which the method of invention occaſions, when employed ſtrictly and indiſcriminately in all caſes; —a loſs which is important in many reſpects, and which is far from being always compenſated by the certain advantages reſulting from its uſe; it alſo frequently happens, that the leſſons of the maſter aſſume an unintereſting, and perhaps, repulſive character, from the uniformity, and we may even add, from the very facility of the proceſs. The attention of the pupil, which no ſtriking object, no difficulty animates, languiſhes and ſoon becomes extinguiſhed, by the very means that ſhould facilitate its exerciſe and operations: while the profeſſor, who ſometimes preſents on a ſudden ideas that are unexpected, and remarkable for their grandeur or their novelty; who, from time to time, neglects a few intermediate obſervations, in order to excite the intereſt and ſtimulate the curioſity of his pupils; and who, according to the nature of his ſubject, paſſes from analyſis to ſyntheſis, and from ſyntheſis to analyſis, taking care to correct, if there be any room for doubt, the more bold deductions of the former by the more ſure and regular proceedings of the latter; ſuch a profeſſor will preſerve the minds of his pupils in a ſtate of more real and permanent activity; he will impart a more powerful impulſe to their thoughts, without running the riſk of communicating to them a vicious direction; and his method, perhaps, will prove alſo the beſt adapted to the nature and operations of the human underſtanding.

It does not ſeem to me, as has been too generally believed, to be owing to any faults of ſtyle, that the works of Condillac have not, from their firſt appearance, obtained all the ſucceſs which they deſerve. His works are written always with purity, often with much elegance of language, and ſometimes with conſiderable animation and effect: but the luminous reaſonings of this excellent philoſopher prepare and reſerve, to the reader, neither ſurpriſes nor difficulties; each paragraph announces the following; and the firſt ſentence anticipates all the reſt. The trouble of the reader is ſpared to ſuch a degree, that he concludes by taking none at all; and the author thinks ſo well for him, that he ſoon comes to think no longer for himſelf.

Theſe reflections are not, perhaps, miſplaced at a time when all the friends of learning celebrate, with one accord, and with ſo much reaſon, the excellence and ſuperior utility of the analytical method; when all thoſe who intereſt themſelves in the improvement of the ſciences and the advancement of their ſtudy, regard it as the only light which can enſure and accelerate the progreſs of the human mind, and reſcue it for ever from the chaos of hypothetical opinions; as the only means of cultivating or employing our intellectual faculties,

ties, which is capable of introducing habits of juſt reflection, not only in all the ſtudies of the enlightened and thinking claſs of mankind, but in all the labours of the artiſan and manufacturer, —in ſhort, in all the ideas, propenſities, and actions of man, conſidered as a ſocial being. I entirely coincide in this opinion, and participate in theſe bright hopes. But the true analytical method proceeds by all the paths that can lead to truth. The moſt ſure in each particular caſe is that which it prefers. Frequently, it collects the data carefully, in order to deduce the concluſions: ſometimes, it fixes upon the reſults, confident that the data will ſpontaneouſly arrange themſelves around them. Both ways of proceeding are familiar to it; and for the moſt part it follows both at the ſame time. Thoſe who think that it ſhould always purſue the track of invention, will have formed but a very imperfect idea of its nature. If they attempt to cramp the energies of genius, or to limit the ſphere of its activity, they will end by deadening it and extinguiſhing it entirely.

I ſhall here conclude the expoſition of theſe general views, which certainly, I repeat, would ſtill require to be much further developed: but the extent and importance of the ſubject have already led me far beyond the limits which I had preſcribed to my pen; and I feel it neceſſary to return once more to the conſideration of ſome particular branches of medical inſtruction.

CHAPTER IV.

Particular Conſiderations relative to various Branches of Medical Reſearch.

SECTION I.

On Anatomy.

BEFORE the time of Hippocrates, anatomy can ſcarcely be ſaid to have exiſted. Galen, indeed, affirms, that the Aſclepiades, to whoſe family the exerciſe of the medical art was for a long time confined, taught their pupils the ſtructure of the human body by the indirect method of diſſections of animals. Their inſtructions, he ſays, began from their earlieſt infancy, and practice rendered the ſubject ſo familiar to them, that it was unneceſſary to deliver the demonſtrations in the form of written lectures. But this opinion, delivered at random like many others of the ſame author, is formally denied by Chalcidius, an ancient commentator upon Plato. The latter affirms, that Alcmeon, the diſciple of Pythagoras, was the firſt who diſſected the bodies of animals. It is, therefore, to a much later period that we muſt refer the practice which Galen aſcribes to the ancient phyſicians of Cos.

In Hippocrates, it is true, we meet with various deſcriptions of the organs of the human body, which were probably drawn from theſe incorrect analogies: but they only ſerve to prove, that the ſtructure of animals itſelf was at that time very imperfectly known; for if the ſubject had been ſtudied with the leaſt attention, ſeveral groſs errors would have been avoided, which Hippocrates ſeems to have adopted with the greateſt confidence. His Treatiſe *On the Heart*, indeed, is ſufficiently accurate; and his enthuſiaſtic admirers may, perhaps, perceive in it a ſort of obſcure anticipation of the diſcovery of the circulation: but it muſt be acknowledged, that this great man was a very bad anatomiſt. The only parts, with the ſtructure of which he ſeems to have been accurately acquainted, were the bones; it being always an eaſy matter to procure human ſkeletons.

Wounds or diſeaſes, which laid bare the viſcera or other deep-ſeated parts; the practice of embalming the bodies of the dead, which, from time immemorial, prevailed in Egypt; finally, the fortuitous diſcovery of human bodies, which had been thrown aſhore from the rivers or ocean, which the precipitate flight of a vanquiſhed army had left upon the field of battle, or which unforeſeen accidents had left at the mercy of wild beaſts, and birds of prey, were the only circumſtances that could have furniſhed phyſicians with a few tranſient and often dangerous opportunities of ſtudying the true anatomy of the human frame. But the prejudice, which on the one hand, attached the ſtigma of ſacrilege to the over-curious examination of the dead, and on the other hand, connected the idea of pollution with the mere touching of their bodies, oppoſed an almoſt inſurmountable barrier to the progreſs of this ſcience. Ariſtotle ſays poſitively, that, in his time, there had not been any diſſection of the human ſubject.

It was not till the age of Herophilus and Eriſiſtratus, when the diffuſion of knowledge had already conſiderably weakened the influence of theſe ſuperſtitious ſcruples, that anatomiſts were able to ſtudy the organization of man, upon man himſelf. The prejudice againſt anatomy was of longer duration among the Romans, who were more ignorant than the Greeks. Pliny ſays, that the laws forbade the inſpection of the human viſcera.—However, the deſire of ſelf-preſervation had a more powerful influence upon the minds of the Emperors, than the reſpect for public opinion; for they frequently permitted the phyſicians to diſſect the bodies of criminals or of captive enemies. Under Marcus Aurelius, the bodies of the Germans were conſigned to them by an expreſs decree. Galen, who relates this fact, had it certainly in his power to diſſect ſeveral of theſe bodies, and we might ſuppoſe that he would have been eager to embrace the opportunity. Yet it appears, from the peruſal of his anatomical deſcriptions, that he had performed no diſſections, but upon the bodies of different animals, and particularly of a great number of apes, which he preferred, on account of their reſemblance to the human body: and although his anatomical writings are very extenſive, and full of excellent obſervations for the time in which they were written, there is reaſon to believe, that he himſelf had never ſeen, in the human ſubject, the organs which he deſcribes with the greateſt minuteneſs.

The anatomy of Galen reigned with excluſive ſway till the time of Veſalius. His errors, which it was certainly much more eaſy to prove in this department of the ſcience, of which all the objects are palpable and determinate, than in that of practical medicine, where they are ſo various, delicate, and changeable; his errors had become part of the creed adopted in all the ſchools of medicine. No one dared to controvert them; no one dared even to appear to ſuſpect that they were errors; till, at length, Veſalius, treating this ſervile idolatry with the contempt it deſerved, boldly attacked Galen and his ſuperſtitious adherents. To him medicine was, in a great meaſure, indebted for the bold and more ſolid advances which it then began, and which it has ſince continued to make, even amidſt its frequent deviations from the proper path of reſearch. But it is to anatomy in particular that he has rendered everlaſting ſervices; it was by the ſucceſsful courage and meritorious exertions of this celebrated man, that this ſcience was freed from its fetters, and that the way was paved for all thoſe brilliant diſcoveries, which at preſent give to the practice of ſurgery ſo high a degree of certainty.

In fact, from this time forward, the progreſs of anatomy has been rapid and uninterrupted. The diſcovery of the circulation of the blood; that of its variations in the adult and in the fetus; the diſcovery of the chylopöetic veſſels, of the thoracic duct and receptacle of the chyle; the demonſtration of the vaſcularity of the different organs of the ſyſtem, by means of the injections of Ruyſch; the ſtructure of the conglobate glands; the partial diſcovery of the courſe and functions of the lymphatics; the phyſiological and pathological reſearches reſpecting the cellular texture; the ſplendid but too often inaccurate experiments on the parts endowed with ſenſation and irritability; the more exact deſcription of the abſorbent and glandular ſyſtems, and the more accurate determination of their real functions;—ſuch are the fruits of the indefatigable zeal of a number of induſtrious men, who, by their unremitting labours, have ſucceeded in advancing the anatomy of the human body to the higheſt pitch of improvement, perhaps, of which it is ſuſceptible.

This ſcience, in ſo far as it is connected with the buſineſs of medical education, preſents different points of view in which it deſerves to be conſidered. 1ſt. It forms part of the phyſical deſcription of the ſyſtem, and, as ſuch, is comprehended in natural hiſtory properly ſo called. 2dly. As the baſis and ground-work of all phyſiological illuſtrations, it forms a neceſſary branch of the ſcience of the animal economy. 3dly. While it ſerves as a guide to the art of phyſic, and in particular to the ſurgical department, it ſeems to be now quite inſeparable from practice, the ſucceſs of which it frequently enſures.

If we conſider it in the firſt point of view, anatomy muſt be referred to the deſcriptive method: it forms a ſort of curious, but inanimate topography. Viewed in the ſecond light, it aſſumes a more intereſting character, and approaches nearer to medicine and ſurgery. While in the laſt, it is connected with the various objects of their ſtudies; and is aſſociated with the greater part of their labours, although it certainly does not always perform the important office that is commonly aſcribed to it.

Anatomy, conſidered as deſcription, has, in a manner, no limits. According as the moſt ſtriking objects are elucidated, others leſs obvious preſent themſelves to view; new worlds are opened before us; and the boundaries of the horizon recede at the moment when we ſuppoſe we have reached them. However, in order to make further diſcoveries of importance in anatomy, it would be requiſite to invent more perfect inſtruments, or ſome method, which, like that of injection, would enlarge and diſplay thoſe parts, the ſtructure of which cannot be detected by our preſent means of inveſtigation. Thus, for example, the minute organization of the brain appears hardly capable of being aſcertained either by the ſcalpel or by our common microſcopes, or by injections, ſuch, at leaſt, as are now commonly uſed. But, luckily, this delicate part of anatomy is rather an object of phyſiological curioſity, than of medical utility. Although we ſhould by no means overlook it; although, even, it is not impoſſible that we may one day derive ſome advantage from it, it is at preſent wholly uſeleſs; and we are inclined to believe that it will always remain ſo.

Though phyſiological anatomy be more limited in the ſphere it embraces, than the anatomy of deſcription, yet it is ſtill leſs ſo than what may be called therapeutic anatomy. The illuſtration of the different vital functions, as founded upon the mere ſtructure of the organs which perform them, has already made ſome progreſs, and bids fair to make further advances. But we are leſs in want of anatomy, properly ſo called, than of a good collection of obſervations upon the living ſyſtem. We are well acquainted with the organization of ſeveral parts of the body, reſpecting the uſes of which we are intirely ignorant. The experiments that we might be diſpoſed to inſtitute in order to aſcertain the functions of theſe parts, are in general very difficult; ſome of them, even, appear to be impoſſible, at leaſt with our preſent means of reſearch: and with reſpect to that branch of anatomy which I have termed therapeutical, and which admits of frequent application to practice, it is confined within very narrow limits. The contrary opinion, which has become very prevalent, originates, perhaps, both from the prejudices of ignorance, and from that ſort of learning which is acquired by laborious and repulſive ſtudies. The ſtructure, ſituation, and connections of the different viſcera, the diſtribution of the principal trunks of the blood-veſſels and nerves, the form and diſpoſition of the bones, the inſertions of the muſcles, the expanſions of the tendinous membranes, and, perhaps, alſo ſome other particulars equally eaſy to learn, ought to be all familiar to the phyſician. Perhaps, we may venture to add, that, even in ſurgical operations, a minute knowledge of anatomy is very rarely of uſe. For a confirmation of this aſſertion, I might with confidence appeal to the candour and diſcrimination of the moſt enlightened ſurgeons.

Each demonſtrator has his particular arrangement and method of inſtruction; and every method and arrangement is good, provided it be clear and diſtinct. When our object is merely a ſimple deſcription of form, it is of little conſequence, at leaſt in general, whether we begin with one part or another. In ſtudying geography, for inſtance, we may ſet out from any point, or begin with any country that we pleaſe. It is ſufficient if the memory retain a correct idea of the places and their reſpective ſituations. The caſe is much the ſame with anatomy. However, the manner in which nature diſplays the objects of its reſearches is not altogether fortuitous; and, perhaps, if demonſtrators took the trouble to obſerve it more attentively, they would find, that they are not at liberty to invert it, when they lay theſe objects before their pupils. Winſlow, in his *Expoſition de la Structure du Corps*, ſeems to have paid ſome attention to this natural order in which the objects of the ſcience preſent themſelves to view. Lieutaud, who was a man of ſenſe and even of ſome genius, though, it muſt be confeſſed, his two compendiums of Materia Medica and Practical Phyſic are below mediocrity, carried his views ſtill farther. It was his object, in the *Hiſtoria Anatomico-Medica*, to have deſcribed the organs of the body, preciſely in the manner in which they would have been examined and deſcribed by the inventor of the ſcience himſelf, ſuppoſing that one man had been capable of accompliſhing all the labours and making all the diſcoveries appertaining to it. The deſign was beautiful; but in the execution of it the author completely failed. Perhaps, ſome able anatomiſt, more familiar with philoſophical methods, may yet take advantage of it; in which caſe the merit will be almoſt entirely his own: for in ſuch matters it is very eaſy to project—the whole difficulty lies in the execution*.

In the mean time, we may venture to affirm, that demonſtrators will find themſelves ſucceſsful in their inſtructions, in proportion as they adhere to the method which this view of the ſubject ſuggeſts, and which itſelf forms only a branch of the general method that we have ſo frequently had occaſion to mention.

The moſt intereſting part of anatomy unqueſtionably is that which has for its object to determine, in organic leſions, the cauſe, as well as the ſeat of diſeaſes;—This forms the true anatomy of medicine. It rectifies many errors, diſſipates many prejudices, and becomes the more uſeful to practice, that it frequently endangers the reputation of practitioners. Who does not perceive, at firſt ſight, all the advantages to be derived from the exact compariſon of the phenomena of diſeaſe, or of the variations which it may have experienced, with the ſtate in which the parts that appear to have been the ſeat of the complaint, and often thoſe which had ſhewn no ſigns of diſorder, are found after death? Who does not ſee, that phyſiology as well as the practice of medicine, may derive a number of important obſervations and intereſting reſults, from ſuch an inveſtigation?

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* When the above was written, the *Traité d'Anatomie* of my friend Boyer had not yet appeared. In the point of view to which I have juſt been alluding, the labours of this eminent ſurgeon have left nothing to deſire.

However, if nothing be more certain and evident, than the ſtate in which the organs are found on ſuch occaſions, on the other hand, nothing is more liable to fallacy and inaccuracy, than the concluſions which we may be inclined to deduce from ſuch obſervations. It is, too, often very difficult to determine the exact limits which diſtinguiſh what may have been the natural ſtate of an organ, in the individual whoſe body we examine, from the condition to which it has been reduced by diſeaſe. The appearances we aſcribe to the diſeaſe of which he died, may depend upon original defects or peculiarities of organization; or they may have been occaſioned by preceding diſorders; or the alterations of ſtructure that we diſcover upon the inſpection of dead bodies may be frequently the immediate conſequence of death itſelf. It requires much attention and penetration, and, above all, it requires opportunities of comparing a great number of obſervations of a ſimilar deſcription, to enable us to appreciate, with accuracy, the importance of any one in particular, and to determine, with preciſion, both the circumſtances in which they reſemble, and thoſe in which they differ. This branch of medical ſcience, even after the beautiful collections of obſervations that have been formed by Bonnet, Morgagni, Lieutaud, and Portal, ſtill affords ample ſcope for the zeal and exertions of anatomiſts and practitioners; and can be perfected only by their unwearied aſſiduity.

Another part of anatomy, not leſs intereſting perhaps, and almoſt entirely new, would be that which embraces the conſideration of the changes that ſupervene, either at the different periods of life in the ſtate of health, or in the different ſtages of diſeaſes, whether acute or chronic;—changes, which death, certain accidents, or alterations in the mode of life, may cauſe to diſappear. It would form a ſort of living anatomy well worthy of the attention of philoſophic phyſicians; who ought not to be diſcouraged from the undertaking by the difficulties attendant upon this branch of reſearch. The beautiful and ſublime truths which they would diſcover, would amply repay them for their trouble.

SECTION II.

On Phyſiology.

SEVERAL branches of phyſiological ſcience have made great progreſs in modern times. There is undoubtedly a wide difference between the treatiſe *De uſu partium* of Galen, and the writings of Stahl, Hoffmann, Boerhaave, Hamberger; of Whytt, Haller, Cullen; of Bordeu, Fouquet, Grimaud, Dumas, and Richerand. The mechaniſm of the different organs is, in general, well known; their functions have been ſatisfactorily determined; and that chaos of occult cauſes, with which the explanations of the ancients were obſcured, has given place to rational ſcepticiſm, or to ingenious theories, which, if they ſtill labour under difficulties, at leaſt reſemble the other branches of our knowledge in their language, which is daily becoming more preciſe. A number of valuable facts have been collected, relating to the general ſenſibility of the ſyſtem, to the modifications which it experiences in the different organs, and the connections which it ſerves to eſtabliſh between them. We have made ſome progreſs in elucidating the proceſſes of digeſtion, ſanguifaction, and generation. If the cauſe of muſcular motion, and the immediate means by which it is performed, ſtill remain enveloped in darkneſs, we, however, know, that this motion is ſtrengthened or weakened, accelerated or retarded, revived or extinguiſhed, according to certain laws. Theſe laws have been diſcovered and eſtabliſhed by a courſe of attentive obſervations: the power of producing theſe different effects has been found to reſide in certain agents; and the force of the moving powers, and of the agents capable of modifying their action, has been ſubjected to calculation. Almoſt all the phenomena of viſion admit of mathematical demonſtration: and the eye is now regarded as little more than a dioptric inſtrument. The uniform relation ſubſiſting between the ſtate of the ſolids and the condition of the fluids, has been proved by the moſt delicate experiments, as well as from the moſt familiar obſervations. From ſome inconteſtable facts have been derived many beautiful views relative to the function of reſpiration and the production of animal heat: others, it muſt be confeſſed, ſeem to contradict, or at leaſt to limit, the too general or haſty concluſions, that have been drawn from the former: but a conſiderable collection of curious obſervations and experiments has been made; and the different lights in which they have been ſucceſſively viewed, hold forth the proſpect of our being able to obtain more certain reſults at no great diſtance of time. To conclude: the nature and compoſition of the conſtituent principles of animal ſubſtances have formed the ſubject of ſome very ingenious reſearches; and there is reaſon to hope that theſe reſearches will, in time, ſerve to illuſtrate ſeveral phenomena of the living ſyſtem, and, particularly, thoſe that occur more or leſs immediately after death.

It muſt, however, be acknowledged, that the characteriſtic ſigns of health and diſeaſe; that the general laws of the phenomena of life; that thoſe remarkable relations eſtabliſhed between the different organs of the body, which ſuggeſt ſo many uſeful practical views; in a word, that the affections and habits of the living ſyſtem had been very well obſerved and deſcribed by the ancients. In fact, every one who is in the leaſt converſant with their writings, cannot fail to perceive the ſolidity of the theoretical principles and practical rules, which theſe attentive contemplators of nature had deduced from their obſervations: and, perhaps, ſince the time of Hippocrates, the hypothetical ſyſtems that have been ſucceſſively adopted in the ſcience of the animal economy, have, in general, tended more to retard the future and permanent improvement of medical ſcience, than to promote the ephemeral fame of their authors.

The explanations of the ancients, though formed upon the ſimple obſervation of the human frame in a ſtate of health and diſeaſe, without the aſſiſtance of anatomy, or of the phyſiological views it ſuggeſts, without the aſſiſtance of experiments, the art of performing which was almoſt entirely unknown, or of the various collateral ſciences, which are conſtantly furniſhing us with direct illuſtrations, or with new inſtruments of reſearch;—theſe explanations have not always been ſucceeded by others of a more juſt and philoſophical nature. Several of their theories, indeed, have occaſionally been revived with ſucceſs, and ſeem deſtined to outlive thoſe which, at firſt, had ſupplanted them: ſome appear to be impreſſed ſo ſtrongly with the characters of truth, that every new improvement in the ſcience only ſerves to confirm them: others, again, which the good ſenſe of the founders of medical ſcience led them to leave in a vague and indeterminate ſtate, ought, perhaps, after the many fruitleſs attempts that have been made to give them a greater degree of preciſion, to be regarded as likely to retain for ever their original form. For the moſt ſtrictly defined terms in modern medicine are only ſo much the more erroneous, that they eſtabliſh, as certain, relations which have not been determined by an attentive examination of the ſubject. All this ſhould be candidly and unequivocally acknowledged in a good ſyſtem of phyſiology.

Perhaps, too, it would not be altogether uſeleſs to inquire the reaſon, why, notwithſtanding the great advances of the preſent age, the ancients ſtill maintain a decided ſuperiority with reſpect to the arts and ſciences of pure obſervation. If we diveſt ourſelves of all prejudice, we may be led to believe, that it is owing to the confidence with which our ſuperior attainments inſpire us, to the facility of procuring books upon all manner of ſubjects, and to the practice of drawing almoſt all our knowledge from this laſt-mentioned ſource; that we muſt attribute this deficiency in depth, originality, and juſtneſs of conception, which is but too manifeſt in the works of modern obſervers. A great part of their time being ſpent in reading, they ſeldom view with their own eyes what the real obſerver ſees in nature: for the truths which it coſts ſo much trouble to extort from the latter, are eaſily found in books; and the advantages in other reſpects ſo important, which reſult from the quick diffuſion of knowledge, are attended with this inconvenience, that the improvement of the mind, with regard to the extent of its acquirements, is often counterbalanced by the loſs it ſuſtains in reſpect of the force and permanence of its conceptions; that the memory of words is often enlarged at the expenſe of the memory of facts; and that we often neglect objects which may be ſeen and examined, in order to inquire what others have imagined and ſaid.

To give a ſyſtematic view of the different functions of the body, is the principal object of phyſiology. To accompliſh this end, it is ſufficient to preſent the principles or views relating to the ſcience in a proper order, and always in the form of concluſions from the ſum of the facts obſerved. The ſelection of the functions or phenomena with which we ſhould commence, is perhaps, in a great meaſure, arbitrary; although in that, as in every thing elſe, there is, no doubt, an order which may be called *natural*, becauſe it is the one beſt adapted to the aſſociation of our ideas. Various artificial methods have been employed with advantage: and almoſt all of them ſeem equally well calculated for the purpoſe. In fact, in the animal economy, every thing is related and connected together in ſuch a manner, that there is no one phenomenon, which we can regard as the firſt, or as the laſt in order. The circulation of the blood depends upon the action of the nervous ſyſtem. The action of the nervous ſyſtem, on the other hand, depends upon the circulation. The due performance of reſpiration, again, is equally neceſſary for both; but, without the concurrence of both, reſpiration could not go on.

If we endeavour to claſs the objects of phyſiological inquiry, according to the differences and diviſion of parts, we are ſtill where we were: for throughout the whole ſyſtem, we meet with organs of all orders and deſcriptions, which enter as component parts into the various members of the body. The muſcles, for inſtance, contain arteries, veins, nerves; the coats of the arteries exhibit in their ſtructure nerves and veins, and probably alſo muſcular fibres *; and ſo on.—It is, to uſe an expreſſion of Hippocrates, a circle, of which we can diſcover neither the beginning nor end: and, as in drawing a circle, it is of little importance at what point in the circumference we commence; ſo, perhaps, it may be allowable to inquirers in phyſiology to follow the arrangement which gives them the beſt idea of the objects of reſearch, and which impreſſes them moſt firmly and diſtinctly on the memory. It is, however, ſufficiently eaſy to employ in this branch of ſtudy, as well as in all the other departments of reſearch, the natural method of obſervation, or that in which we begin with the objects firſt obſerved,

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* The analogy of the arteries of the larger animals, in which they may be eaſily ſeen, juſtifies us in the preſumption, that theſe fibres alſo exiſt in the arteries of the human body, but are too delicate to be perceived.

with the moſt obvious phenomena, in order to proceed by degrees from the known to the unknown, till we reach the moſt remote or ſubtile objects of reſearch, which are, of courſe, thoſe which nature preſents laſt to our view and examination.

SECTION III.

On the Relations of Medicine and Moral Philoſophy.

It is now beginning to be perceived, that medicine and moral philoſophy form but two branches of the ſame ſcience, which, when united, conſtitute the *Science of Man.* Both reſt upon a common baſis,—upon the phyſical knowledge of the human conſtitution; and it is to phyſiology, that they muſt look for the ſolution of all their problems, and for the confirmation of all their ſpeculative and practical truths. Upon the phyſical ſenſibility of the ſyſtem, or of the organization that determines and modifies it, depend, in reality, our ideas, our ſentiments and paſſions, our virtues and our vices. The diſordered or regular emotions of the mind have the ſame origin as the diſeaſes or health of the body: and this ſource of the moral affections is in the organization of the human frame; upon which both the power and manner of thinking eſſentially depend. On it are imprinted in indelible characters, and by the hands of Nature herſelf, thoſe immutable principles which form the only ſolid foundation of our rights and our duties. Equality, liberty, virtue, and happineſs, cloſely united together, are identified in ſome meaſure with our exiſtence: oppreſſion, tyranny, vice, and misfortune, equally inſeparably allied, as it were in a deſtructive and invincible ſyſtem, proceed always from direct and evident injuries done to our original nature, and from the ſubverſion of the relations that are eſtabliſhed between man and his fellow-creatures, by their common organization.

From the proper uſe of our faculties; from a reſpect for that voice within our breaſt, whoſe ſuggeſtions are always ſufficiently diſtinct, if we are inclined to hear them; from a ſcrupulous and attentive obſervation of that ſpontaneous direction, which our innate deſires and propenſities aſſume; in ſhort, from the habitual ſtudy of ourſelves and others, of our own ſenſations and their objects,——proceed liberal ſentiments, juſt and magnanimous ideas, reaſon, virtue, happineſs. From a contempt for that divine voice within our breaſt; from the abuſe of the gifts of nature; from a blind forgetfulneſs of the eternal laws by which the univerſe and we ourſelves are governed, ſpring all our errors, vices, and ſufferings. It is important, and even highly neceſſary, to point out this conſtant connection between the different ſtates of our phyſical frame, and the different ſtates of our moral conſtitution. It is by ſhewing, in what manner our ſenſations are quickened or blunted; in what manner our ideas are elevated and enlarged, or degraded and contracted; in what manner the paſſions are produced and developed, at one time acquiring a degree of energy which overcomes all obſtacles, at another time remaining wholly inert, or, after a few ineffectual ſtruggles, becoming deadened and extinguiſhed for ever: it is only by poſſeſſing ourſelves of all theſe inviſible regulators of the human mind, that we can hope to be able to direct it by ſure paths to happineſs. It is by theſe means, that we are enabled not only to accuſtom the mind to a proper way of thinking, and to render morality a ſort of want, but alſo to enlarge all the faculties of man, to increaſe and refine all his enjoyments, and to gratify with real objects of contemplation that reſtleſs propenſity which is inceſſantly carrying him beyond himſelf,—that inſatiable deſire of novelty which cannot be reſtrained within the bounds of ſpace and time. Thus it happens, that, during his ſhort and confined exiſtence, the idea and conviction of a progreſſive and unlimited improvement in his condition extends his mental acquirements, in ſome meaſure, to infinity.

The neceſſity of ſearching, in the phyſical conſtitution of man, for the means of directing and improving the human mind, is proved from the conſideration of the circumſtances that connect, with the developement of certain organs, the formation, and often ſudden formation, of certain propenſities, and of the particular ideas that relate to theſe propenſities; and from the attentive ſtudy of the moral effects produced by certain habits of regimen, by certain diſeaſes, by certain original peculiarities of organization, or by certain accidental ſtates of the living ſyſtem.

Take, for example, the infant whom the fickleneſs of his taſtes hurries inceſſantly from one object to another. Do not his half-formed manners, his lively but unconnected ideas, preſent a faithful copy, if we may ſo expreſs ourſelves, of the ſtyle in which nature has ſketched the outlines of his life;—of his quick but imperfect digeſtion; of his frequent, unequal, and irregular pulſe? Are not the characteriſtic features of the infancy of our phyſical frame all exemplified in the infancy of our moral conſtitution? And can we ſuppoſe that the latter will be affected by agents, that do not exert an immediate influence upon the functions of the different organs and general movements of the ſyſtem?

Obſerve that youth, who haunted by a vague uneaſineſs, continually abſorbed in revery, and melted to tears by the ſlighteſt emotions, begins to find ideas in his imagination, and deſires in his heart, which, before, were unknown. At the ſame time that the flame of paſſion is kindling in his breaſt, that his mind lays eager hold of every thing around it, and purſues every novel object, his ſtature, his features, manners, looks, and ſound of voice, acquire a different character. His deportment becomes more firm and impetuous; his phyſiognomy, though ſtill very delicate, aſſumes a more animated caſt; his cheeks often change colour; his eyes expreſs both deſires, and the ignorance and uncertainty of their aim. —It is then only that nature makes him ſenſible to the language of paſſion, which ſpeaks to his heart, and the knowledge and uſe of which he accordingly very ſoon acquires. Do not his ideas, his moral and his phyſical diſpoſitions, all evidently agree? and are not the changes that have made him, in a manner, a new being, ſolely dependent upon the developement of a ſyſtem of organs, which, till then, had remained inert, and which, for the moſt part, had ſcarcely attracted his attention*?

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* I ſay, *for the moſt part*, becauſe I ſpeak of mankind in general. In a former work of mine, intitled, "*Rapports du Phyſique*

Perhaps, this period produces ſtill more important and remarkable changes in females. In them, the relations of the moral and phyſical conſtitutions are diſtinguiſhed by features apparently more delicate and ſuperficial, but in reality more characteriſtic and profound. A young girl, whoſe organs begin to be rouſed from the dormant ſtate in which they had remained during early age, does not move a ſtep, does not ſpeak a word, does not caſt a look that retains the character of infancy: the change is ſo evident, as to ſtrike the moſt inattentive obſerver. The timidity, embarraſſment, and caprice in her behaviour, which ſhe in vain ſtrives to conceal; her vague and uncertain looks, that give place to an expreſſion which ſeems to dread diſcovery, and to a fire which breaks forth with more violence, the more that ſhe labours to diſguiſe and conceal it; all theſe circumſtances united can leave no doubt in the mind, with regard to the revolution in the ſyſtem that has juſt been affected, with regard to that important operation of Nature, which announces and produces changes of ſtill more eſſential importance to the final accompliſhment of her plan. That boſom, the undulations of which ſo often deſcribe the affections of the heart, and

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Phyſique et du Moral de l'Homme," all theſe ideas are illuſtrated in greater detail: See in particular the Memoir *On the influence of the Sexes on the formation of Ideas.*

which, at firſt ſight, ſeems deſigned only for an object of ſoft deſires, becomes now fitted, according to the admirable proviſion of nature, for preparing the food of a new being, whom theſe ſame deſires are deſtined to call into life. Thus, a whole ſyſtem of organs, the ſource of the moſt lively paſſions, and the influence of which not only modifies the other functions of the body, but alſo gives birth to ſo many new ideas and moral ſentiments before unknown, is, in the hands of Nature, nothing more than the means by which ſhe enſures the indefinite duration of the human race.

Obſerve, too, in mature age, in what manner the regularity of the pulſe, the permanent energy of the functions, and the inveteracy of the diſeaſes of the ſyſtem, correſpond with a greater uniformity in the diſpoſition, with the more ſteady ideas, and leſs lively, but more profound and indelible paſſions of manhood.

On the other hand, take the frigid body of the old man, and mark if that regular but ſlow circulation, thoſe blunt, and in a manner infantile ſenſations; thoſe diſeaſes, for the moſt part of a phlegmatic character, and of which nature ſeems hardly to dare to undertake the reſolution, do not afford the faithful image of that tardy flow of ideas, of thoſe puerile and irreſolute deſires, and of that repugnance to form deſigns which the individual cannot hope to accompliſh, which all characterize the decline of life. In ſhort, the phyſical conſtitution of the old man affords both the indication and the picture of a mind, which, contracting by degrees within itſelf, prepares for bidding a final adieu to exiſtence by the moſt lamentable of all ſacrifices, by diſengaging itſelf from its ſocial affections.

In the different aſylums which have been inſtituted for the reception of lunatics, in thoſe, too, which the legiſlature appropriates to the confinement of criminals, whoſe errors are but a ſpecies of inſanity, you may find numerous proofs, perhaps ſtill more ſtriking, of thoſe conſtant relations between the phyſical and moral conſtitution of man. From their inſpection you may learn, that criminal habits, and aberrations of reaſon, are always accompanied by certain organical peculiarities, manifeſted in the external form of the body, in the features, or in the phyſiognomy. And you muſt remark, with the ſatisfaction which benevolent minds always feel at ſuch a diſcovery, that theſe two ſpecies of diſorders are frequently blended, and are always more or leſs intimately connected together.—I confine myſelf purpoſely to theſe moſt ſtriking examples, the ſubjects of which are conſtantly before our eyes, and may be therefore ſo eaſily examined*.

The phyſiologiſt, then, will in future be obliged to collect with care all the facts relative to theſe points, which the ſtudy of man in a ſtate of health and diſeaſe can ſupply, and their reſults will form the baſis of all the moral ſciences. Henceforth no one can, with propriety, undertake to illuſtrate theſe ſubjects, who is not poſſeſſed of an exact and circumſtantial knowledge of the connection between good or bad phyſical habits, and good or bad intellectual and moral diſpoſitions. It is by theſe means alone, that we ſhall be able to learn how to improve the one by the other: it is upon theſe principles, that we muſt found the rules of their improvement; whether we addreſs ourſelves merely to individuals, in order to teach them the art of augmenting their happineſs; or point out, to whole communities, the means of turning to the beſt account all the advantages of their lot. It is, in fine, according to ſuch views, that we ſhall be enabled to trace, with certainty, the plan of a gradually increaſing ſtate of proſperity, of which men of reflection and philanthropy have hitherto, perhaps, only ſhewn the poſſibility, without forming to themſelves a perfect idea of the means that ought to conduct mankind to it.

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* This ſubject has been treated at full length in the work above quoted, which is particularly devoted to its conſideration.

The method of rational empiriciſm, which collects facts in order to claſs them, by pointing out the laws which govern their relations to each other, admits of a complete application to phyſiology. A number of obſervations have been already made:—Theſe muſt be connected in a natural order. Others remain to be made:—and theſe we may ſometimes indicate by anticipation. In particular, it is of importance to determine carefully, in what deſign, and by what methods, all inquiries of this ſort ought to be made, ſo as to prove ſucceſsful; and in what manner the concluſions ought to be deduced, ſo as to prove certain; by what characteriſtics we may be able immediately to recogniſe the accuracy of theſe concluſions; and in what manner it is expedient to connect them with thoſe which already form the baſis, or elementary principles of the ſcience, in order that they may ſerve mutually to correct and illuſtrate each other.

SECTION IV.

On Pathology, Semiotics, and Therapeutics.

PATHOLOGY, or the doctrine of morbid affections; Semiotics, or the doctrine of ſymptoms; Therapeutics, or the art of deducing from the two firſt the proper methods of treatment, form, when combined, the practical part of medicine.

The great variety of the ſubjects, perhaps alſo the idea, that, by continually dividing and diſtinguiſhing them, we ſhould be able to ſimplify and illuſtrate them, and facilitate their ſtudy, often induced the ſcholaſtic philoſophers to ſeparate that which ſhould have remained connected, while other equally inconſiderate motives led them ſtill more frequently to confound objects which had no connection whatever. It is evident, that the deſcriptive and hiſtorical expoſition of a diſeaſe, the catalogue of the ſymptoms which characterize it, and the method of applying to it the curative means, are abſolutely inſeparable, or, to ſpeak more accurately, this method can be founded on nothing but the above-mentioned catalogue and circumſtantial expoſition.

However, the cuſtom alluded to has prevailed in almoſt all ſyſtematic works: the diviſion I have deſcribed, is ſtill pretty ſtrictly obſerved: and no one thinks of inquiring, whether it exiſt in nature, or whether any advantages reſult from its uſe.

Towards the middle of the laſt century, Sauvage, by claſſing diſeaſes in the ſame way that botaniſts arrange plants, introduced into practical medicine a fourth branch of inſtruction, to which he applied the name of *Noſology*. Sagar, Linnæus, Vogel, and Cullen, have ſince produced other ſyſtems of Noſology, deſigned upon ſomewhat different plans. In each of theſe ſyſtems, diſeaſes are arranged according to certain features of reſemblance, which the author ſuppoſes them to poſſeſs. Neither the art, in itſelf, nor its method of inſtruction, have perhaps gained much by ſuch claſſifications; but tables, ſo confined as to the ſpace they occupy, and ſo extenſive as to the matter they embrace, and in which the principal objects of the ſcience may be viewed at a ſingle glance, eaſily perſuade the reader, that he is acquainted with theſe objects, becauſe he knows their titles or definitions. Hence, they are always favourably received.

The idea, however, of the claſſification of diſeaſes was firſt ſuggeſted by Sydenham. The opinion of Boerhaave with regard to them, encouraged Sauvage very much in the execution of his labour: and the ſucceſſors or imitators of the latter have fancied they improved upon his method,

thod, by reducing it to a dry nomenclature, in which the reader looks in vain for the learned diſquiſitions of the profeſſor of Montpellier.

Sydenham was deſirous to poſſeſs ſuch tables of diſeaſes, as under each particular head would have recalled to his mind his own obſervations and the obſervations of others; and which would have placed before his eyes, the hiſtory of diſeaſes and their correſponding mode of treatment. Nothing, at firſt view, can appear better deviſed, or likely to prove more uſeful, than ſuch a plan. But this eminent genius did not advert to the circumſtance, that, in following the method he propoſed, a phyſician would hardly be able to form good tables for any but himſelf, for, by tranſmiſſion, the indications become always disfigured. A practitioner delivers views of diſeaſe that are perfectly correct only to thoſe who have received the ſame impreſſions as himſelf: conſequently, the miſapplication that may be made of theſe views, by readers, whom long practice in the obſervation of nature has not rendered familiar with all the phenomena of the morbid ſtate, and who have not arrived at the pitch of being able to recogniſe, as the ancients expreſſed it, *ex ungue leonem*; this miſapplication of the juſteſt ideas may become the ſource of the moſt pernicious errors.

The ſcholaſtic ſyſtem of pathology has been gradually improved in the hands of a few teachers, whoſe talents enabled them to introduce a certain method, even into the moſt complicated claſſifications. Among the works which have been publiſhed on this ſubject, and dictated by this ſyſtematic ſpirit, one of the moſt eſteemed is that of Gaubius, the pupil of Boerhaave, and celebrated for many uſeful and learned performances. But the true pathological method is diſplayed to greateſt advantage in the writings of the ancients, to which a few uſeful additions have been made by a ſmall number of modern obſervers. Hippocrates, Aretæus, Alexander of Tralles, Aëtius, Paulus Ægineta, Galen, and two or three Arabian phyſicians, have left us the moſt exact deſcriptions of diſeaſe, of which the art can boaſt; this no one poſſeſſed of any candour can deny. We may further add, that their general rules of treatment, deduced, at leaſt in general, from the minute inveſtigation of nature, are calculated to excite our aſtoniſhment, no leſs by the ſublimity of the views which they indicate, than by their admirable propriety and truth.

The pathology of the ancients is always identified with their ſemiotics. Sometimes, they ſeparate their hiſtories of diſeaſe from the account of the methods of cure: but in common their plans of treatment, ſupported, as they are, by both, ſerve to reflect an additional degree of light upon them, which the mere view of the ſpontaneous operations of nature is often incapable of affording.

The labours of the ancients have been epitomiſed in ſeveral modern works. The brief deſcription of diſeaſes by Lommius preſents a compendium of what Sennertus and Riviere abridge, it is true, but nevertheleſs preſent more in detail. Duret, Houlier, Baillou, Jacot, Proſper Martian, Piquer, and ſome others, have explained and confirmed their remarks, by many obſervations of their own. Theſe monuments erected to the glory of antiquity prove, even at the preſent time, abundantly ſtored with ſolid information. Their peruſal will be found very uſeful; in particular, that of the ſhort collection of Obſervations by Lommius is one of the moſt inſtructive books which a young phyſician can read. By joining with it the Treatiſe *De præſagienda Vita et Morte* of Proſper Alpinus, and ſome of the books of the *Methodus Medendi* of Galen, he may not only become familiar with the pathology and ſemiotics of the ancients, but may alſo acquire a competent knowledge of all the doctrines which their practice has ſanctioned *.

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* In this place, I deem it unneceſſary to mention ſeveral modern authors and profeſſors, who have attempted to introduce

Abridgements and ſyſtems, while they preſent us with the reſult of numerous obſervations, do not always ſuperſede the neceſſity of referring to the original ſources of information. The obſervations of the ancients, condenſed, as they are in general, with moſt genius in their own writings, are eaſily connected with the ſummary doctrines which they have deduced from them; and the memory receives and retains them with the greater facility, as they are the offspring of genuine rational-empiriciſm. Rarely do thoſe of the moderns poſſeſs the ſame happy characters. This, perhaps, may be aſcribed to the circumſtance of the moſt important ſubjects having been anticipated and deſcribed by the former in ſo ſtriking a manner. Perhaps, too, that remarkable talent for obſervation which is ſo conſpicuous in Hippocrates, in Aretæus, and ſome others, has been leſs quickened among us by phyſical and political circumſtances: and perhaps, the inhabitants of the northern and weſtern parts of Europe have really leſs natural penetration than thoſe of Greece, of Aſia Minor, and of the iſlands of the Helleſpont.

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duce a reform into pathology: but I cannot paſs over in ſilence the merits of our worthy Pinel, whoſe *Noſographie* is not only one of the moſt happy efforts of claſſification, but forms, in almoſt all its parts, an exact and complete compendium of practical medicine.

Whatever be the reaſon, our beſt obſervations are ſtill in a very ſcattered ſtate; and the ſyſtematic works which give a ſummary abſtract of them, by no means ſuperſede the neceſſity of recurring to the original obſervers. In order to collect theſe different deſcriptions of diſeaſe, it is neceſſary to peruſe many volumes; and, thus, erudition, which ſtrengthens, perhaps, a few vigorous minds, but which, for the moſt part, clogs and hebetates common intellects, becomes neceſſary to the phyſician.

It is ſufficiently evident, that one of the principal objects which thoſe capable of contributing to the reform of the ſcience ſhould conſtantly have in view, is to endeavour to adapt it, as far as poſſible, to the intellectual capacity of all;—to free it, both from its falſe jargon, and from its ſcientific pomp. It is high time to inſtitute a reviſal and ſelection of truths: it is high time, alſo, to form a ſelection of books. All thoſe which are not really original, or directly inſtructive by their method of arrangement, ſhould be carefully peruſed: all the uſeful matter which they contain, ſhould be extracted, and afterwards they ſhould be laid aſide, perhaps for ever. When the inventory of our knowledge ſhall have been once well formed, its hiſtory rapidly ſketched, and the road that conducts to great diſcoveries traced with exactneſs, men of good ſenſe, without fatiguing themſelves by fruitleſs and tireſome ſtudy, ſhould devote to the inveſtigation of nature a great portion of that time which at preſent they employ in conſulting books: and having their minds formed by the peruſal of the ſmall number which are really capable of ſtrengthening, enlarging, and directing their judgement, they cannot be too eager to encounter, if we may ſo expreſs ourſelves, the actual objects of their labours.

In the ſtudy of practice, in which the phenomena, or the points of view in which they are to be regarded, are ſo numerous and various, the adoption of this plan is ſtill more indiſpenſably neceſſary, and will probably be found ſtill more highly uſeful. The requiſite courſe of reading for the young practitioner may be reduced within the compaſs of a few original books, and a few collections of ſelect and well-arranged obſervations. Theſe books ſhould be read in ſome meaſure at the bedſide of the patient; and the new facts preſented by nature may ſerve for a commentary upon them. The office of the teacher may be confined to the taſk of indicating and determining, with accuracy, the objects which ſhould be attended to and examined; of demonſtrating them to the pupil under a proper point of view; and of teaching him a good method of obſervation and inquiry.

The phyſicians of Cos, who did not adopt ſo many uſeleſs diviſions, who did not believe that the perfection of their art conſiſted in ſuch vain and ſubtile claſſifications, were far from imagining that the hiſtory of diſeaſes, the doctrine of ſymptoms, and the ſcience of indications, could be ſeparately treated and diſtinguiſhed. Still leſs did they ſuſpect that practical medicine, of which they form, as it were the indiviſible members, could ever be taught from a profeſſorial chair, at a diſtance from the objects of its application.

The ſyſtem of medical inſtruction is compoſed of ſubjects differing in themſelves, but differing alſo in the manner in which they ſhould be taught. Some are communicated very well in the form of written lectures, or in the learned converſations of a ſkilful profeſſor. Books, although, in general, to be preferred for this ſpecies of inſtruction, yield, however, in certain reſpects, to deſcriptions which the ſound of the voice, and frequently the ſight of the hearers, renders more animated; and to explanations, which being more detailed, without becoming fatiguing by their prolixity, are better adapted to the different capacities of the pupils; and, beſides, in oral inſtruction, we have it in our power to preſent repeatedly, and under new forms, thoſe points which do not appear to have been at firſt properly comprehended. But the ſubjects which admit of this method, are few in number; and in all others, the profeſſor can be well underſtood only in preſence of the objects themſelves. To attempt to deſcribe a muſcle, a diſeaſe, or a chemical operation to a perſon who has never ſeen this operation, diſeaſe, or muſcle, is like attempting to convey the idea of the flavour of a particular fruit to one who is unacquainted with it, or of the odour of a perfume to one who has never inhaled it.

The Greeks, we find then, taught the practice of phyſic, at the bedſide of the patient: and for this reaſon they applied to it the term *clinical*. Nature ſupplied the text of the lectures, and the doctrines delivered were confirmed or corrected by facts.

At Rome, where the art of medicine was generally practiſed by Greeks, the ſame method was conſtantly employed. The phyſicians in greateſt repute carried their pupils along with them to viſit their patients; and, in this way, accuſtomed them to obſerve nature in its different aſpects; to follow it in all the changes which it undergoes; to foreſee the reſults of its ſpontaneous efforts; and to calculate the effects of remedies. Their patients, indeed, were thus expoſed to the additional inconvenience of being too often uncovered and handled by the pupils of their phyſician.

Under the emperors of the Eaſt, hoſpitals were erected and maintained, not only for the relief of the diſeaſed poor, but alſo for the improvement of the art, and the inſtruction of ſtudents. The ſame plan was followed by the Arabians, whoſe colleges in the Eaſt and in Spain had always a hoſpital in their neighbourhood. The Arabian phyſicians looked upon a large infirmary as a neceſſary laboratory for the obſervations and experiments of the practitioner; as a ſort of gallery, in which the young ſtudent would find a diſplay of inſtructive pictures, which books muſt always imperfectly deſcribe. In ſhort, they no more imagined that, in their ſchools, they could diſpenſe with an aſſemblage of patients, than with a collection of remedies, or a chemical and pharmaceutical laboratory, or a garden for rearing medicinal plants.

Several of the ſeminaries of Europe, eſpecially ſince the revival of the Hippocratic ſyſtem of phyſic, have enjoyed the ſame advantages. But it is only lately, that true clinical ſchools have been introduced into our univerſities, and have been formed on a plan worthy of the information and philoſophy of the age. Not that phyſicians have not been always aware of the neceſſity of obſerving diſeaſes, in order to become acquainted with them; of following the different plans of cure, in order to compare and appreciate them, to repeat or correct them: but it was ſolely in conſequence of the zeal of a few enlightened profeſſors, that inſtructions in the true practice of phyſic were ſometimes given in hoſpitals; for the lectures, which they preſumed to call by this name, were commonly delivered within the halls of univerſities. There nothing could confirm the aſſertions of the teacher, when they were founded, and nothing could confute them when they were contradicted by obſervation and experience: words were heard, but nature remained unſeen.

The ſchools of Vienna and Edinburgh firſt ſupplied this void. The philoſophy and zeal of Joſeph the Second * rendered the ſchool of Vienna for a long time ſuperior to any thing of the kind, which, till then, had been conceived. That of Edinburgh, rendered famous, almoſt on a ſudden, by a reunion of men of diſtinguiſhed talents, has not only acquired the greateſt celebrity, but has really formed many excellent practitioners, ſeveral of whom continue to render, in different parts of Europe, the moſt eſſential ſervices to mankind.

In a ſmall work upon Hoſpitals, publiſhed

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* Notwithſtanding the active part which this Emperor took in the coalition againſt France, we may ſtill venture to praiſe him for the good which he has done, and to praiſe him, in particular, for that ſpirit of toleration, which he was anxious to introduce into his dominions.

about the commencement of the Revolution, I propoſed the eſtabliſhment of clinical ſchools in France, pointing out their advantages, and demonſtrating their neceſſity. I was ſeconded in this wiſh by all thoſe who had the improvement of medicine at heart. In the ſame eſſay I gave an account of the attempts which had been made by my reſpected maſter, Dubrueil, under the auſpices of the Marſhal de Caſtries, at that time Miniſter of the Marine; and ſhewed, that to theſe attempts we owed the inſtitution of the two Clinical Schools of Breſt and Toulon: and the ſervices which theſe have rendered furniſhed me with ſufficient proofs of the juſtneſs of the views that had directed their eſtabliſhment.

In 1792, the Commiſſion appointed to inſpect the hoſpitals of Paris, of which I had the honour to be a member, was deſirous to put in execution certain projects which were ſupported by the ſuffrages of the moſt enlightened men, and which were dictated by a deſire to promote the public good. We had made choice of the hoſpital called *La Charité*, for the eſtabliſhment of the firſt clinical ſchool: the plans were prepared, and the means were all calculated and provided. But, in a ſhort time, the whole of France fell into the power of the too celebrated *Commune* of Paris. The Commiſſioners of Hoſpitals, believing their ſervices to be no longer uſeful, gave in their reſignation, or were diſperſed; and the little good which they had been able to effect, was in a great meaſure annulled: in particular, the execution of the ſcheme, which they had projected, was ſuſpended till a happier moment.

At length, the firſt law for the organization of the Schools of Medicine enacted, that, in future, the pupils ſhould receive clinical inſtructions in theſe ſchools: and all the means that are calculated to render ſuch inſtructions productive of benefit, have been combined with great judgment and care in all the three ſeminaries, but particularly in that of Paris. All that they now want, is to be allowed to proceed quietly in their labours.

By particular regulations, indeed, all hoſpitals might be eaſily converted into ſo many ſmall ſchools of practice. Nothing could be more advantageous: for the young ſtudent would then find, in every quarter, that genuine practical inſtruction, which is the moſt neceſſary of all. When they came to be introduced into the large ſchools, they would carry along with them the habit of obſervation which they had acquired: and the other branches of medical ſcience would arrange themſelves with the greater clearneſs and diſtinctneſs in their minds, as they would have collected the materials of it, with ſenſes that were improved by this ſame habit of obſervation, and with a judgment that was accuſtomed to exerciſe itſelf upon impreſſions immediately derived from the objects of reſearch.

It is ſurely ſuperfluous to enlarge upon the advantages of clinical ſchools in general: and it muſt be ſufficiently obvious how much the multiplication of theſe eſtabliſhments in hoſpitals for the ſick may become beneficial. In the firſt place, the patients in theſe hoſpitals will be more carefully treated: for, when they are the ſubject of uſeful obſervations, they muſt alſo become the object of particular attentions. The phyſician, being more directly intereſted in the ſucceſs of the plans of treatment purſued, digeſts them with more attention, applies them with more care, and takes more precautions for making the influence of the regimen concur with the operation of the medicines. Under his eyes, and almoſt without his aſſiſtance, young pupils are formed, whoſe inſtruction is the more ſolid, as it is given at the expenſe, if we may ſay ſo, of nature herſelf, and as it is, to a certain degree, independent of the talents of the profeſſor. By this continual exerciſe of their penetration and judgment, from the view of ſcenes compoſed entirely of facts, the pupils contract the habit of obſerving them better, and feel an averſion to all reaſoning that is not conformable to them: they acquire, in ſome meaſure involuntarily, that true philoſophical ſpirit, which in medical reſearch is founded upon this habit and taſte. Complete collections of the obſervations which have been made upon all the infirmities of the human frame, are ſoon formed in the journals of caſes kept by the profeſſors; and from their compariſon are derived the moſt certain rules for the modifications which the treatment of theſe ſame diſeaſes may require, according to differences in the climate, the ſeaſon of the year, the ſtate of the atmoſphere, the age of the patients, their conſtitution, &c. General epidemics, or thoſe common to different countries, and partial epidemics, or thoſe peculiar to certain ſituations, are obſerved with greater care in their variation and returns, and are deſcribed more faithfully in their moſt tranſient phenomena. To conclude: by numerous trials, we aſcertain the power and utility of all the known remedies; and we venture to make ſuch experiments as are pointed out by analogy; a quick communication and interchange of ideas is eſtabliſhed between the different obſervers, who are bound by one common intereſt not to conceal the fruits of their reſearches: and from all theſe materials, there muſt neceſſarily reſult more comprehenſive, regular, and exact ſyſtems of ſcience, which will daily approach nearer and nearer to the truth, and which, from their ſuſceptibility of being applied and accommodated to all manner of circumſtances, will unite the advantages of prudent dogmatiſm, with all the benefits of genuine rational empiriciſm.

SECTION V.

On Hygieine.

HYGIEINE teaches the means of preſerving health, and forms an important branch of moral as well as of medical ſcience. Ethics, being in fact but the *ſcience of life*, how is it poſſible for this ſcience to be complete, without a knowledge of the changes which the ſubject to which it is applied may experience, and without a knowledge of the means by which theſe changes are effected? Hygieine, therefore, and, conſequently, ſome conciſe notions of anatomy and phyſiology, ſhould form a part of every ſyſtem of education. In order to derive the greateſt benefit from our intellectual faculties, in order to direct our inclinations and deſires in the way moſt favourable to our happineſs, it is abſolutely neceſſary to adapt all our phyſical habits to the nature of our employments, and to the moral diſpoſitions that we are deſirous to cultivate: for a good regimen is often ſufficient to harmonize our ideas, and to regulate our paſſions. Both, it is obvious, are derived from a ſimilar ſource, from the impreſſions received by the different organs of the ſyſtem; and volition, when it is exerted, puts into action theſe ſame organs, which nature has ſubjected to its control. How deſirable then is it not, to be acquainted with the ſtructure and immediate functions of theſe uſeful inſtruments, by means of which we receive ideas, form deſires, and execute all our labours! How diſgraceful is it not, to remain ignorant of the cauſes which may promote or derange their action! How many ridiculous prejudices, how many vain alarms, what puerile credulity does not this ignorance generate, even in minds ſufficiently enlightened in other reſpects!

The dietetic books of Hippocrates, the moſt ancient we poſſeſs on the ſubject, are ſtill to be ranked among the firſt, on account of the valuable matter which they contain. Several learned phyſicians have commented upon them at different periods. Lorri, in his *Traité des Alimens*, has almoſt invariably adopted the general views delivered in them, and has confirmed them by all the facts which the natural philoſophy and chemiſtry of his time were capable of ſupplying.

Marſilius Ficinus, obliged, as he was, by a delicate ſtate of health, to be particularly careful in his regimen, collected numerous obſervations on this ſubject, and laid down a variety of rules for himſelf, which he, no doubt, believed to be ſafe and uſeful: but as his head was filled with aſtrological notions, and hypochondriacal fancies, we can place but little confidence in his judgment, or even in the accuracy of his recitals.

Cardano, endowed with a penetrating genius, but diſcovering little judgment or attachment to truth in his obſervations; Bruyerin, who, to a thorough acquaintance with the works of the Greek phyſicians, joined a true ſpirit of obſervation; Sebiſius, who is placed by Boerhaave at the head of all the writers on Hygieine, leave little to be wiſhed for in regard to general rules. But Sanctorius has ſince opened a new channel of inveſtigation; Cornaro, and the author of the Engliſh work, intitled, "An Account of the long Lives obſerved in the Three Kingdoms," lay down certain popular precepts for the preſervation of health. Lommius, and more lately Mackenzie, have treated the ſame ſubject ſcientifically. Cheyne has not inveſtigated it thoroughly; but his book preſents ſome refined views: and Arbuthnot, from whom we might have expected a truly philoſophical work, has, in his Eſſay *On the Nature of Aliments*, conſidered this ſubject only in a very partial manner.

To conclude; I might point out a few other books, both on gymnaſtics *, and on the regimen of perſons in diſeaſe, or on the daily uſe of different ſorts of food. Some of theſe contain uſeful or curious matter; but none embraces the ſcience of dietetics in its full extent. Bacon alone, from ſome views thrown out apparently at random, ſeems to have contributed more than all the reſt towards its future advancement †.

But leaving this imperfect catalogue of books and authors, we may remark, that at different periods of life, as well as in different diſeaſes, the ſame ſorts of food do not produce the ſame effects. Every ſtage of life has its peculiar habits and paſſions. Both, when directed according to the obvious intentions of nature, and confined within the limits which ſhe aſſigns to them, conſpire equally to the ſupport of the phyſical and moral health; and to the general developement of the ſyſtem.

In different climates, and in different ſituations, the temperature and condition of the atmóſphere,

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* The work of Mercurialis is ſtill deſerving of peruſal.

† I purpoſely avoid making mention of the treatiſes, whether general or particular, which have been publiſhed on this ſubject by living authors. We have long been in expectation of a work from the pen of Profeſſor Hallé, which will, no doubt, prove worthy of the author and of the learning of the age.

the quality of the waters, the exhalations from the ſoil, the nature of the food which it ſupplies, of the employments which it neceſſitates, and of the taſtes or the wants which it engenders, operate, ſometimes in concert, at other times ſeparately, in forming certain diſtinguiſhing local habits. The diverſity of theſe habits ſtrikes even the moſt inattentive obſerver, who naturally refers them to their true cauſe,—the difference of ſoil and climate. He perceives, that they are uſeful or neceſſary in one place, and dangerous, or even fatal, in another: and every thing proves to him, that, in their turn, they become the immediate cauſe of the external appearance, and even, in a great meaſure, of the character peculiar to the inhabitants of different countries.

Certain it is, that man, though apparently the weakeſt of animals, is, in reality, the ſtrongeſt. He habituates himſelf, by degrees, to all temperatures, to all modes of living: he accuſtoms himſelf to the greateſt fatigues, and to exceſſes of every deſcription: he can harden himſelf, ſo as to bear the moſt ſudden changes without inconvenience. His firm and pliant fibres adapt themſelves to every ſtate in which he is placed: and, frequently, in thoſe circumſtances which appear calculated to overwhelm and deſtroy his vigour, he finds the means of developing new faculties, that excite even his own aſtoniſhment.

The uſe of certain kinds of food or drink may tend to confirm or impair certain moral habits. Sometimes, it may operate directly, and by the immediate impreſſions which it produces; at other times, by the different ſtates of health or diſeaſe which it occaſions, or by the changes in the fluids and ſolids which reſult from it: for all theſe different alterations in the ſyſtem ſoon manifeſt themſelves more or leſs diſtinctly in the ordinary diſpoſitions of the will and underſtanding.

The paſſions, the peculiar caſt of the ideas, the nature of the intellectual exertions, the habit of certain trains of thought, or their introduction into a mind which they tend to agitate, may, in their turn, exert the greateſt influence on the phyſical frame. Every day, we meet with the moſt ſtriking examples of this power which the moral habits poſſeſs over the phyſical conſtitution,—a power which appears incomprehenſible, only when we look for the ſource of theſe intimate relations, beyond the organs by which we receive impreſſions, and which are capable of acting and reacting upon each other. How many men are killed or cured, by the force of the imagination! How many conſtitutions are impaired and debilitated, or re-eſtabliſhed and, in ſome meaſure, renewed, by particular affections, by the flow of ideas and ſentiments aſſuming an unuſual direction! Bacon aſſerts, that to form ſome new ſcheme every day, is one way of prolonging life; that, it is true, wiſdom inclines man to uniform and tranquil purſuits; but that fools, in all probability, on account of the contrary diſpoſition, would have a greater chance of long life, if their extravagancies did not hurry them into a number of immediate dangers.

This much, however, is certain, that the abandonment of the occupations to which we have been long accuſtomed, deranges the order of the vital actions, accelerates old age, and ſhortens life; and, frequently, very obſtinate chronic diſtempers have been cured, by ſnatching the patient from the languor of repoſe, or the monotony of retirement, and by impoſing new duties upon him, or changing the nature of his employments.

All the facts illuſtrative of theſe general views ſhould be carefully collected, compared, and diſcuſſed. We may draw from them, even at preſent, ſome uſeful rules of Hygieine, which will be found equally applicable to every ſyſtem of education, whether public or private: and this almoſt new branch of moral and phyſical ſcience preſents to the inquirer a rich and ample field of reſearch.

We ſhould not, indeed, confine ourſelves to the deſcription of the different ſorts of food, to an account of their nature, and to the determination of their effects: but we ought to point out the trains of impreſſions, ideas, or deſires, which may reſult from their uſe; and we ought to eſtimate each particular mode of living, with reference to its influence upon the ordinary diſpoſitions of the ſyſtem, and upon thoſe of each organ, its faculties, and its functions. It would be doing little, to determine the utility of exerciſe, or the effect of any particular kind of exerciſe: we muſt take into review the various employments to which man may be ſubjected in different parts of the globe, and in different circumſtances of life: we muſt examine in what reſpect they may become uſeful or injurious; what are the means of obviating the bad conſequences attendant upon them, or of rendering their beneficial effects more complete, conſtant, and certain.

In conſidering the powerful influence of the paſſions and ideas upon the ſtate of the organs, upon their developement and their functions, we ought to be no longer ſatisfied with the vague and general aſſertions to which phyſicians and moraliſts have hitherto confined themſelves: but we ſhould endeavour to apply our knowledge to direct practical purpoſes, and ſee whether, from the compariſon of the obſervations which have been already made, with thoſe which daily experience muſt naturally offer to inquiſitive minds, we might not form a collection of rules for regulating the employment of the mental affections, ſo as to promote the re-eſtabliſhment or preſervation of health. In ſhort, by embracing the view both of our phyſical and moral conſtitution; by pointing out their relations, and the means by which they act upon each other, we may hope to be able to render theſe doctrines, when completely confirmed, ſubſervient to the general improvement of the ſyſtem. And we may here repeat, what I have elſewhere obſerved; that the uniform experience of ages proves, that phyſical peculiarities of diſpoſition are tranſmitted from parents to their children; and ſome well aſcertained facts, ſeveral ſtrong analogies, and the general laws of the animal economy, lead us moreover to believe, that certain moral habits are alſo propagated by generation. In laying down the rules of regimen, therefore, we muſt carry our views ſtill farther,—we muſt aim at the progreſſive improvement of the whole human race.

SECTION VI.

On Surgery and Surgical Operations.

The art of ſurgery, riſing, as it did, with medicine, was not ſeparated from it till in the times of ignorance and barbariſm;—thoſe times in which the prieſts and monks were, and deſired to continue, the only phyſicians of Europe. A pretended *dread of the Church at blood*, or rather, the profound ſtate of degradation into which ſurgery had fallen, in the hands of a rude and worthleſs ſet of men, made theſe monks and prieſts deem it politic and expedient to abandon operative medicine to barbers and mountebanks.

In Hippocrates' time, this ſeparation had not, and, indeed, could not well have taken place. It only appears, that the right of performing certain operations belonged excluſively to particular perſons. Hippocrates, in his Oath, comes under the obligation not to practiſe lithotomy, either for the above mentioned reaſon, or becauſe he regarded the wounds of the bladder as mortal. In France, this ſame operation was for a long time the patrimony of a ſingle family, in which the right to its performance from father to ſon, was recogniſed, and in ſome meaſure ſanctioned, by a tacit agreement and by popular prejudice.

Hippocrates was phyſician, ſurgeon, and pharmaciſt, and wrote on all the three branches of the ſcience. His ſurgical works may vie with his other writings: and, even at this day, if we can derive no new information from them, we may at leaſt perceive in them the firſt glimpſe of the light which modern diſcoveries have thrown upon almoſt all the branches of the art. His Treatiſe "Concerning the Wounds of the Head" contains a number of valuable obſervations, and ſhows, that the author poſſeſſed a true chirurgical genius.

Celſus, in ſketching and deſcribing the ſtate of medicine among the Greeks, gives alſo a view of their ſurgery. Paulus Ægineta enriched the art with ſeveral inventions and plans of treatment of his own. Under the Arabians, it alſo made ſome progreſs. But it was not until the revival of anatomy, about the time when Veſalius ſhook off the yoke of Galen and of the ſchools, that, with the aid of natural philoſophy which opened for itſelf new channels of inquiry, it took that bold range which has ſince conducted it from one diſcovery, from one triumph to another. Ambroſe Paré, Fabricius Hildanus, Fabricius of Acquapendente, Marcus Aurelius Severinus, John de Vigo, Guy de Chauliac, and ſeveral others, may be conſidered as the fathers of ſurgery among the moderns. The ſeventeenth century has given birth to ſeveral diſtinguiſhed practitioners of the art; but the eighteenth century maintains a decided ſuperiority, both with reſpect to the characters of the perſons who have exerciſed the profeſſion, and the importance of the truths which they have eſtabliſhed, or the prejudices and errors which they have overthrown. Palfin, Dionis, Duverney, Solingen, La Peyronie, Rau, Heiſter, Petit, Lamotte, Queſnay, Monro, Louis, Pouteau, Cheſelden, Pott, the two Hunters, and many others, whom it would be too tedious to enumerate; ſome of them embracing all the branches of the art, and treating it in a ſyſtematic manner; others, again, directing their attention to thoſe particular points which their genius or particular circumſtances led them to ſelect, have ſimplified, improved, and enlarged it: while the eminent operators, whom we have lately loſt, ſuch as Deſſault, Choppart, &c. or thoſe who ſtill ſurvive, and whom I ſhall avoid mentioning, in order not to betray too great a partiality for my countrymen, by naming almoſt none but French ſurgeons; theſe eminent operators, I ſay, have been continually removing the boundaries of the art by their indefatigable exertions, and forming pupils every way worthy to ſucceed them.

Almoſt all the important parts of ſurgery have been ſucceſſively reviewed, and have undergone many uſeful changes. The cure of fiſtulas, eſpecially thoſe of the anus, the amputations of the larger limbs, the diſeaſes of the bones, the

operations

operations for the ſtone, for hernia, for aneuriſm, and thoſe of the obſtetric art, &c. have all, in leſs than a century, made ſuch conſiderable advances, that we may juſtly regard the art as in ſome meaſure completely renovated.

It is, I preſume, unneceſſary to remark, that the ſtudy of ſurgery, like that of phyſiology, is to be referred to the three methods of inveſtigation above mentioned—the deſcriptive, hiſtorical, and deductive; while the ſtudy of hygieine employs chiefly the two latter. But, perhaps, it may not be improper to obſerve, that inſtructions in ſurgery, being always neceſſarily given in preſence of the objects of its ſtudy, have afforded leſs ſcope than thoſe in ſome other branches of the ſcience, for the deluſions of quackery, and the fictions of the imagination. The improvements which this department of medical education may ſtill require, are ſo eaſy as to admit of being completed and confirmed for ever by the example of a ſingle teacher ſufficiently converſant with philoſophical methods.

With regard to the improvements which ſhould take place in the elements of the art, the obſtacles that oppoſe their introduction proceed, partly from the imperfections of its ſcientific language, and partly from the too mechanical character of its general principles. We have ſeen how far, and in what manner it is poſſible to remedy the former of theſe diſadvantages, and what new diſorders may ariſe from a ſimilar reform. The latter inconvenience proceeds from the very nature of ſurgical ſtudies. Slow and narrow minds, who always form the moſt numerous claſs, ſind viſible and palpable ſupports for their reaſonings and theories, in the circumſtance to which we have alluded. For the habit of reaſoning upon objects which they have before their eyes, tends very much to inſpire men with confidence: but, unfortunately, a rough ſenſe of perception and confined knowledge are not always ſufficient for enabling them to diſcover the character of objects through their external covering. This cuſtom of regarding every thing as material, may lead them into numberleſs errors, and muſt often prove fallacious, when applied to practice. It is therefore to the improvement of phyſiology and pathology, that ſurgeons of talent and diſcernment ſhould particularly direct their attention.

The inſtrumental and manual part improves, if we may ſay ſo, of itſelf. But the treatment of a wound which is rather ſerious; the influence of an important operation upon the ſyſtem in general; certain extenſive, though often not very perceptible changes, which general diſorders and ſurgical complaints exert upon each other; all deſerve to be particularly attended to. True ſkill is ſhewn as much in rendering an operation unneceſſary, as in performing it well; in curing a wound, or any other local affection, by internal and general means of cure, as by the application of topical remedies or by the moſt ingenious inſtruments. In ſhort, ſurgery muſt borrow certain views from general medicine, in the ſame way that medicine is often obliged to have recourſe to ſurgical aſſiſtance.

SECTION VII.

On Materia Medica.

THE deſcription of the means which art employs for the cure of diſeaſes, conſtitutes what is called *Materia Medica.* Theſe means or remedies are the productions of nature. Chemiſtry and pharmacy combine them and prepare them: clinical medicine teaches their application, and notes their effects. Thus, the knowledge of animal, vegetable, or mineral ſubſtances, of the external characters by which they are diſtinguiſhed, of the manner of their formation, of the country which produces them, and of the changes which time occaſions in their properties, forms a branch of natural hiſtory. On the other hand, all the decompoſitions, combinations, and mixtures to which they are ſubjected, before being applied to uſe; all the modifications which they experience, or which they are capable of experiencing in theſe new combinations, or in their application to animated bodies; belong to the province of chemiſtry and pharmacy: while the obſervations made at the bedſide of the patient, upon the virtues of the remedies, which, when arranged in the ſame order as the ſymptoms of the diſeaſes in which they are exhibited, complete the hiſtory of the latter, ought properly to be referred to clinical medicine; for they can only be ſupplied by obſervant practitioners.

It is by examining, by touching, viewing, ſmelling, and taſting, the different articles of materia medica, that we learn to know them: it is by ſeeing them decompoſed and compounded, and by obſerving the qualities of the products or new combinations, that we acquire juſt notions of their chemical properties: it is by witneſſing their preparation in a laboratory, by preparing them ourſelves, that we form a clear idea of their tranſmutations, and of the different properties, which the different modes of preparation may impart to them: and it is only in the courſe of long and extenſive practice that we become acquainted with the real properties of medicines, and learn to appreciate them, not in a vague manner, but by their real effects, circumſcribed and determined with accuracy, and with reference to the particular caſes in which they have been obſerved.

Nothing, certainly, can be more difficult, than to aſcertain, with regard to the medicines we employ, the real ſhare which they may have in the changes that occur ſubſequently to their uſe. The obſervations and experiments upon this ſubject preſent many uncertainties and difficulties, and are liable to various ſources of inaccuracy. It is often no eaſy matter to decide, whether theſe remedies have really had any ſhare whatever in the production of the changes obſerved. There are ſo many accidental circumſtances which may have given birth to the phenomena obſerved, or at leaſt may have modified them in ſuch a manner as to render it impoſſible to diſcover their true cauſe. And it is ſtill more difficult to aſcertain preciſely the particular property, which renders any remedy capable of producing any particular effect.

If we turn over the books of materia medica, we ſhall be ſurpriſed to find the ſame ſubſtance ranked in ſeveral different claſſes and genera. At one time, it is purgative, at another, aperient, at another, expectorant, and ſo on. It is more particularly among the claſs of ſedatives that we meet with remedies ſelected from almoſt all the other claſſes; and the moſt credulous can ſcarcely avoid entertaining ſome doubts of the propriety of ſuch an arrangement. When applied to the living body, remedies act in very different ways, in different circumſtances. Sometimes it happens, that a purgative proves ſedative; at other times, a tonic, an acid, a bitter, &c. The ſame medicine may become, by turns, evacuant, diuretic, and ſudorific. It is therefore neceſſary to determine the variations which ariſe from this diverſity of effects, by a ſeries of experiments, repeated by different obſervers, in different places, and in all the different circumſtances in which the animal body can be placed. It is even ſometimes neceſſary to inquire, if the remedy, which is the ſubject of examination, poſſeſs any real and determinate properties whatever.

Thus, then, the beſt ſyſtem of materia medica would be that which gave a faithful extract of the obſervations collected at the bedſide of the patient, upon the properties of medicines, either according to the claſſification of their general effects, or according to the arrangement of the different methods of cure. This is the plan which Vogel ſeems to have had in view; but unfortunately he contented himſelf with giving the reſult of the obſervations, without ever entering into a detail of the circumſtances which alone could ſerve to characterize the effect obſerved. When he ſpeaks of the properties of *cinchona*, for inſtance, he ſhews very well that this ſpecies of bark has been employed with advantage in ſuch and ſuch diſeaſes, quoting at the ſame time the authors who mention its uſe: but he gives no detailed account, or even general view of the ſymptoms of theſe diſorders, the ſeaſon of the year, the conſtitution of the patient, or the proper time for the adminiſtration of the remedy;—all circumſtances capable of modifying its action very materially, and without the knowledge of which it is conſequently impoſſible to eſtimate it duly. It is, therefore, ſufficiently obvious, that theſe long collections of obſervations, often contradictory in themſelves, can be of little uſe to the reader, if he poſſeſs no means of reconciling theſe contradictions, and of diſcovering in each particular caſe the true cauſe of the effect obtained. The work of Vogel, then, though excellent in ſome reſpects, muſt be recaſt, or at leaſt reviſed: and experienced practitioners, who, in taking advantage of his laborious reſearches, would undertake to collect and to claſs the facts which he points out, confining themſelves to a delineation of their principal characters, would unqueſtionably render a moſt eſſential ſervice to young ſtudents. And this new undertaking would be ſtill more inſtructive, if the authors added their own obſervations to the numerous facts related by Vogel, whether they tended to confirm the concluſions obtained from the latter, or to confute them and correct them.

It is, beſides, very evident, that the ſtudent, before he has begun to obſerve for himſelf, can learn abſolutely nothing from general abſtracts of the obſervations of others: and when one has formed for himſelf a catalogue of remedies, the effects of which he knows from perſonal experience, he will ſcarcely be inclined to look into books for the indications of their uſe. Our materia medica is already too extenſive; and we are not ſo much in want of new remedies, as of a good method of employing thoſe which we poſſeſs. Capivacci uſed to ſay to his pupils, *Diſcite meam methodum, et habebitis arcana mea.*

This method of treating the ſubject of materia medica, would be altogether clinical: it is only, I repeat, at the bedſide of the patient, that the moſt important part of it can be taught with ſucceſs.

SECTION VIII.

On Chemiſtry and Pharmacy.

As yet chemiſtry is but remotely allied to the practice of phyſic. The knowledge of the changes which the different ſorts of food or medicines may experience in conſequence of their admixture with the different ſubſtances which they meet with in the ſtomach, is no doubt uſeful and neceſſary to the practitioner: but theſe changes are far from being ſo various or important as ſome perſons ſeem to imagine; and, beſides, if they were ſo, it would be ſtill very difficult to aſcertain them with accuracy. Stahl uſed to obſerve, *Chemiæ uſus in medicina nullus, aut ſere nullus*:—an opinion which was unqueſtionably true with reſpect to his age, and which is, perhaps, equally applicable at the preſent time. The freſh luſtre which the labours of the modern chemiſts, and, particularly, of the French chemiſts, have imparted to the ſcience, and the highly meritorious endeavours of ſome of them to render the diſcoveries that are made in it directly ſubſervient to the medical art, do not appear to have hitherto furniſhed us with any very comprehenſive, or, what is of more conſequence, with any very certain reſults. We ought not, however, to deſpair of one day deriving from it ſome light reſpecting the relations of animated bodies, in their different ſtates, with the other bodies of nature; and it is eaſy to imagine, how much the ſcience of hygieine and practical medicine would be benefited by ſuch illuſtrations. But the experiments neceſſary for the attainment of this object are not to be made in laboratories: it is not by operating upon bodies devoid of life and ſenſibility, that we can expect to arrive at reſults which ſhall be all equally ſure and applicable to practical purpoſes. It is by the obſervation of the living and ſenſitive frame; it is at the bedſide of the patient, and in large infirmaries, that we muſt practiſe this new, this animated chemiſtry, if we may ſo call it, of which all the products become disfigured the moment that death takes place. To be ſuſceptible of application to dietetics and practical medicine, theſe reſults, and the theoretical conſequences which flow from them, ſhould be ſupplied by obſervations relating to theſe ſubjects; for they will be juſt, only in as far as they reſt upon facts immediately deduced from them.

In the preſent ſtate of our knowledge, chemiſtry is the guide of natural hiſtory: it points out the means by which the arts may appropriate to themſelves its various treaſures; it prepares, combines, and multiplies the ſubſtances which are capable of ſupplying our wants; it begins to ſhed its light upon the different branches of phyſics properly ſo called; and ſeveral phenomena, which had been till lately but imperfectly underſtood, have been referred to the claſs of combinations or decompoſitions of which chemiſtry has diſcovered the laws. To conclude: this ſcience, from which almoſt all the arts derive aſſiſtance, is, as it were, connate with pharmacy; it forms, indeed, part of it; and it is from this ſcience that medicine has derived a number of its moſt powerful remedies.

Chemiſtry, after having long remained the inheritance of quacks and enthuſiaſts, is now diligently cultivated by the beſt informed and moſt diſtinguiſhed men of the age. After having ſo often ſerved as an inſtrument of folly; after having corrupted, by its pernicious influence, various branches of natural ſcience; it has at length aſſumed a truly philoſophical character, and follows the moſt ſure and unerring path of reſearch.—Such is the real cauſe of its rapid and ſplendid ſucceſs.

Pharmaceutical chemiſtry has followed the ſame career, and is animated by the ſame ſpirit. Its proceſſes have been becoming, every day, more ſimple and more rational. The traſh with which our pharmacopeias and diſpenſatories abounded, is gradually diſappearing; and although the reform be far from complete, yet, from the manner in which it has been begun, we may indulge the hope, that the follies and puerilities with which officinal preparations and preſcriptions formerly teemed, cannot long reſiſt the powerful influence of reaſon.

This reform is, in a great meaſure, the work of Baumé *; it is he, at leaſt, who firſt expoſed the

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* When my reſpectable colleague, Deyeux, ſhall have publiſhed his Pharmacy, we may conſider this reform as in a manner terminated.

groſs abſurdity of ſeveral preparations, the inefficacy of others, and the improper practices of druggiſts and pharmaciſts. Since his time many of theſe abuſes have been corrected, as far, at leaſt, as the nature of a trade, where probity has no guarantee but itſelf, would allow it to be: and the pharmacopeias have gradually reduced the number of their formulas, and baniſhed the complicated proceſſes of the ancients, the futility of which has been demonſtrated by our recent acquirements.

It is not by the peruſal of books, that we can hope to learn chemiſtry and pharmacy; but by witneſſing the various proceſſes of theſe arts, by performing them ourſelves, and by rendering ourſelves familiar with the ſubjects of them, and the inſtruments by which they are effected.—This method, we muſt again beg leave to obſerve, applicable as it is to all practical ſtudies, is ſo excellent in itſelf, that the talents of the profeſſor become in a manner ſuperfluous, and nature herſelf, that is, the preſence of the objects of reſearch, corrects almoſt all the miſtakes which he may commit in his oral inſtructions.

In quitting this ſubject, it is, I preſume, unneceſſary to remark, that the method of analyſis and recompoſition is peculiarly applicable to chemiſtry. We know what great advantages this ſcience has derived from a more ſtrict application of philoſophical methods. By employing them upon material and ſenſible objects, it has improved the methods themſelves, and the ſame analyſis, which it ſo conſtantly practiſes, has, when handled in a ſkilful and conſiderate manner, no longer appeared inapplicable to intellectual ſubjects.

SECTION IX.

On Botany.

Several branches of ſcience were ably and ſucceſsfully cultivated by the ancients; while many others, on the contrary, remained in a ſtate of infancy. The practical works of Hippocrates are admirable: but his writings on Anatomy and Materia Medica are below mediocrity. The "Hiſtory of Animals" by Ariſtotle may be regarded as a model of compoſition, both for the manner of pourtraying the general characters and analogies of the animal kingdom, and for the extreme accuracy of its details:—never was nature delineated with a more ſteady hand. His "Natural Philoſophy", again, is not only unworthy of the author; but we may ſafely pronounce it to be nothing more than a tiſſue of abſurd and ridiculous opinions, the offspring of a ſubtile and miſguided imagination;

and with reſpect to the language which he there employs, it would, perhaps, be difficult to find any where elſe an example of ſuch a caballiſtical jargon.

While certain branches of phyſical reſearch have made great and rapid advances, others have languiſhed in an obſcurity, for which it is not always eaſy to account; and have remained in the back-ground, notwithſtanding the accelerating impulſe, which they ſeemed likely to receive from a belief of their neceſſity, or from the popular prejudices in their favour.

Such was the caſe with Botany, which before the time of Hippocrates can ſcarcely be ſaid to have exiſted. This diſtinguiſhed writer mentions a great number of plants; but he confines himſelf to a deſcription of their medical properties.—Theophraſtus and Dioſcorides created the ſcience: Pliny and Galen enriched it, but without reducing it to ſyſtem: and the Arabians left it nearly in the ſame ſtate, in which they had received it from the ancients.

Among the moderns, Matthiolus, Faloppia, and Fabius Columna, revived the ſcience; while John and Caſpard Bauhin, Cæſalpinus, and Geſſner, reformed it and improved it. It has been recaſt, and, in ſome meaſure, renovated, by Tourneſort, who, after expoſing the imperfections of the methods that prevailed in his time, had the courage to project, and the perſeverance to accompliſh the plan of its entire reform. This plan, which was at once ſimple and comprehenſive, could have been conceived only by a ſtrong mind, and executed only by the moſt indefatigable exertions.

Ray, though living in retirement, with few books, and without the means of undertaking extenſive journies, has, notwithſtanding, made many uſeful reſearches, and ſuggeſted many uſeful views. He was the firſt who perceived the neceſſity which there is, if we wiſh to avoid confuſion, for diſtinguiſhing plants not according to the reſemblance of a ſingle part, but according to that of all, or, at leaſt, of the moſt important parts. Although in practice this ſyſtem be liable to many difficulties; yet we muſt acknowledge, that it recommends itſelf by its accuracy, and that, in general, it accords very well with the external forms of plants, and even with their properties.

Among the ſyſtems which have ſince been propoſed, that of Linnæus will always hold a diſtinguiſhed rank. It ſtill ſerves for the foundation, or, at leaſt, the companion of the arrangements to which a more advanced ſtate of knowledge, and a more ſound method of philoſophizing, have given birth.

This ſyſtem is indebted, perhaps, for all its celebrity to the ingenious obſervation upon which it is founded: and, perhaps, its real advantages, whether with reference to the mere botanical examination of plants, or to the acquirement of a knowledge of their uſes, may be reduced within very narrow limits. The illuſtrious authors of the ſyſtem adopted in the *Jardin National* ſeem to have formed the ſame opinion of its merits. They did not deem it incumbent upon them to confine themſelves to a ſingle characteriſtic in the claſſification of the different ſpecies of plants: their arrangement compriſes and combines, in a manner, all of them; and by adding their own obſervations to thoſe of their predeceſſors, they have neceſſarily produced a uſeful and highly finiſhed performance.

Botaniſts ſeem, in general, to have taken the ſame pains to deſtroy the relations which their ſcience has to other branches of knowledge, that they ſhould have employed in ſearching for them, and in multiplying them. They ſeduloufly avoid the conſideration of vegetables in any other light than that of their bare deſcription: their properties and uſes are almoſt entirely overlooked by them: and ſome of them would even be indignant if the ſyſtems of arrangement diſcovered any traces of theſe important particulars. All attempts to introduce, into botany, views relating to medicine or the arts, would be regarded by them as tending to disfigure the ſcience.

But this mode of inſulating the ſtudy of botany, and of reducing it to the ſtate of a dry nomenclature, may be conſidered as the principal cauſe of the averſion which many perſons of excellent underſtanding feel for its ſtudy. To this circumſtance, too, we muſt attribute the remarkable tendency, which it has to fatigue, often to no purpoſe, thoſe memories which can retain ideas only by reaſoning. And, if men of great judgment and diſcernment have long refuſed it the title and characters of a real ſcience, we may reaſonably impute the blame to this ſingular determination, on the part of its votaries, to allow hardly any uſeful application to be made of it to other branches of phyſical reſearch.

I am aware, that when the object is to claſs twenty-five or thirty thouſand plants, only a ſmall number of which are known by their properties, it may be deemed ſuperfluous to take into conſideration this characteriſtic, which appears ſo eſſential in the eyes of the unenlightened claſs. But ſo much the worſe, perhaps, for thoſe who can learn and retain ſo many names and deſcriptive terms, to which no ideas are attached but thoſe of ſome particular forms, or other external characters!

Botany, then, may be conſidered in two very different points of view; in the firſt place, as a ſimple claſſification of all the bodies belonging to the vegetable kingdom; ſecondly, as one of the great magazines of nature, from which medicine borrows ſeveral powerful remedies, and from which the arts derive many uſeful materials.

Viewed in the former light, botany would be a mere nomenclature, at leaſt, if the ſyſtem on which we have juſt been animadverting be perſevered in. Now, we may often have occaſion to conſult a ſyſtem of nomenclature: but the barren proſpect it affords, can neither delight the imagination, nor intereſt the underſtanding.

In the ſecond point of view, botany preſents an ample field for experimental reſearch; and aims at the diſcovery of relations, which it is both uſeful to know and curious to determine. Syſtematic methods, which would faithfully delineate theſe relations, would ſerve to gratify our natural thirſt of knowledge, and the more laudable deſire of applying the reſults of our ſcientific inquiries to the practical buſineſs of life, and of rendering them ſubſervient to our daily wants. This popular ſyſtem of botany would not be formed upon the narrow plan of Chomel, which is not ſufficient even for the medical part to which he has confined himſelf; but it would comprehend all the uſes of vegetables; and their diſtribution would be regulated according to the analogy of their properties.

Perhaps, in ſuch a caſe, it might be adviſable to have recourſe to two methods of claſſification; the one comprehending the different ſpecies of nutritive, pharmaceutical, or poiſonous plants; the other, thoſe which are employed in the arts, or applied to certain purpoſes of inferior conſequence, or relatively to which ignorance and error are leſs prejudicial. Might not this prove the means of giving a very general attraction to a ſcience, the objects of which are capable of affording us ſuch great and refined enjoyments? For nature ſeems to delight in clothing the plants in the richeſt and moſt beautiful colours, in impregnating them with the moſt delicious perfumes. We breathe, as it were, a new life with the invigorating air of gardens and of groves, as all of us muſt have very often experienced, and always with reiterated pleaſure: but a dry ſcholaſtic method of contemplating the vegetable kingdom, muſt weaken theſe agreeable impreſſions, and leave few traces of them in the memory. The illuſions of the imagination, and the ſentiments that are deareſt to the heart, blended, as they often are, with the ideas of verdure and flowers, do not make the ſtudy of a catalogue leſs inſipid and monotonous, than it naturally is, or prevent the pleaſure of contemplating objects that are both curious and intereſting, from being entirely loſt amid the labour of learning names, in general very unmeaning, or technical phraſes, (which are but more circumſtantial names) or arbitrary definitions.

But botany contains within itſelf many fruitful ſources of diſcovery; and the moſt eminent men who cultivate it begin to be no longer ſatisfied with theſe barren arrangements. After remarking all the external characters, they have perceived that the phenomena which diſtinguiſh vegetable life, were far more deſerving of reſearch. In fact, the examination of the germination, growth, fructification, diſeaſes, and death of the numerous tribes of plants, is not only highly curious as a branch of natural philoſophy; but may alſo become productive of direct utility, by promoting the improvement of gardening and agriculture; and by furniſhing the means of augmenting national wealth.

The phyſiology of plants ſhould be founded upon their anatomy; and ſhould itſelf ſerve as the baſis of their pathology and therapeutics. The minute ſtructure of their organs, and of the elementary parts of which they are compoſed, muſt, therefore, be ſtudied with particular attention.

Thus, a new and noble path of inquiry preſents itſelf to botaniſts of talent and obſervation. By combining the ſtudy of the phenomena which vegetable life offers directly to view, with the inveſtigation of the different changes, combinations, or decompoſitions, to which plants are inſtrumental, or which they themſelves may experience, we ſhall be able, perhaps, one day to detect the myſtery of their formation and growth.

Medical botany may, no doubt, be learned in gardens, in the fields, and on the mountains; but it ought alſo to be ſtudied in the laboratory and in the drying-ſhade. It is neceſſary to obſerve the changes which the ſame plant undergoes, not only during its deſiccation, but alſo during its various preparations. It may be uſeful to compare the taſte and ſmell, which it has when in the ground, with the taſte and ſmell which it acquires, when withering, drying, and decaying, or which it imparts to other ſubſtances that are combined with it. To conclude; the knowledge of this ſpecies of botany is confirmed and completed at the bedſide of the patient: and it is obvious, that it then encroaches upon materia medica, of which, indeed, it forms a part, and from which it cannot be ſeparated, without ceaſing to belong to the art.

SECTION X.

On Veterinary Medicine.

VETERINARY Medicine has been, in a manner, created in modern times. However, in Ariſtotle, Xenophon, and Pliny, and in the *Rei Ruſticæ Scriptores*, we meet with a conſiderable number of obſervations collected by the ancients upon the art of preſerving the health of horſes, oxen, and dogs, and of curing the diſeaſes to which they are liable. The rearing of horſes has, in all ages, been an object of particular care and attention; the training of dogs and birds of prey forms the ſubject of a learned art; and as all theſe animals are liable to diſeaſe, men muſt have ſoon found themſelves obliged to ſtudy the means of curing their complaints. But between theſe firſt rude attempts, and a true ſyſtem of veterinary medicine, the difference is very great: and, although Ramazzini and ſome others had deſcribed, with accuracy, certain epizootic diſeaſes; although they had endeavoured to aſcertain what relations they might have to the epidemic diſorders to which the human body is liable, and to determine the methods which ſhould direct their cure; and although we were in poſſeſſion of ſeveral very extenſive treatiſes on veterinary medicine; the art could not, properly ſpeaking, be ſaid to exiſt, as it formed no regular body of ſcience, founded upon a ſyſtematic collection of facts.

It may be ſaid to date its origin from Bourgelat. It was, in fact, that celebrated veterinary ſurgeon, who firſt referred the empirical operations of the art to general principles, and combined them with more accurate notions of anatomy and phyſiology; and who not only connected the different obſervations on the ſubject in a methodical manner; but alſo indicated the views with which new obſervations ſhould be made. To him we are, in particular, indebted for the firſt inſtitution in which the veterinary art has been the ſubject of true clinical inſtruction, and in which lectures have been given, like thoſe of practical medicine, in preſence of the diſeaſes which form the ſubject of inquiry.

The diſciples of his ſchool and the illuſtrious profeſſors of that of Charenton, have proved the importance of this firſt ſucceſsful impulſe which the riſing art had received: for in both theſe eſtabliſhments it has made rapid advances, and both have produced ſeveral men of diſtinguiſhed merit, whom we are ſo fortunate as ſtill to poſſeſs *; and

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* Since the above was written, a premature death has deprived us of Gilbert, not leſs to be regretted on account of the noble virtues of his heart, than for the talents and information which had procured him ſo great a degree of celebrity, at ſo early a period of life.

the ſtudents who repaired from all the countries of Europe to France, began, even under the old government, to apprize the nation of a treaſure which they ſeemed to undervalue.

The increaſe, preſervation, and improvement of the breed of animals are objects of too direct importance for it to be neceſſary to prove, how much the public welfare is concerned in the progreſs of the art relating to them.

Beſides, it may ſurely be regarded as a duty incumbent upon us to beſtow upon thoſe beings who are endowed with ſenſibility like ourſelves, and who ſo patiently ſhare in our labours, all the care and attention, which can tend to increaſe the comforts of their exiſtence. Do they not frequently form a part of our families, and are they not the moſt uſeful inſtruments of a number of enterpriſes, which ſerve to augment our riches, and to multiply the enjoyments of the ſocial ſtate? If our wants conſtrain us to deprive them of life before the period allotted to them by nature, can we neglect to render the ſmall number of days which we leave them, and which we may ſtill employ to our advantage, as agreeable as ſlavery will permit them to be? Or would it be to preſume too much upon the benevolence of man, to expect to find, in the attentions which he beſtows upon his uſeful companions, ſome ſentiments of gratitude, joined to thoſe of perſonal intereſt? I truſt not. True benevolence,

nevolence, which is never extinct, and which operates often in ſilence, is undoubtedly leſs uncommon, than gloomy imaginations deſcribe it, or depraved hearts affect to believe it to be. The evils of life are always ſtriking from their nature:—but the good is obſcure. Many perſons treat their domeſtic animals as friends or companions: and the inhabitants of the country, when they loſe them, mourn for them as for brothers. Such attachments are ſo nearly akin to thoſe which unite man and man, that they ſurely cannot be too ſeduloufly cultivated.

Thoſe perſons who to a proper degree of ſenſibility, without which man as a moral agent can ſcarcely be ſaid to exiſt, join the habit of reflection, which alone can preſerve the former in due regulation, violate none of theſe indirect affections of the heart; convinced, as they are, that ſuch affections tend to improve their reaſon as well as ſenſibility, in the happieſt manner, and that nothing is better calculated to impart a favourable direction to both. How eaſy would it be to revive in minds that are not entirely depraved, theſe ſentiments of humanity, which prove ſuch fruitful ſources of the moſt refined enjoyments! Our happineſs even requires, that they ſhould be carefully inſtilled and diligently cultivated in our hearts; and that every thing which tends to weaken their force, ſhould be removed from our ſight.

How, then, can we regard with indifference thoſe inſtances of barbarity, which ſtupid brutality daily preſents to our view? How can we ever become the accomplices of the capricious cruelty with which animals are ſo often treated? But with reſpect to our companions and the partners of our toils, it is not ſufficient to avoid all unneceſſary bad treatment: we muſt be more juſt, and endeavour to render them happy. They augment our enjoyments, and often preſerve our life: let them therefore not paſs theirs in ſuffering and privation. This conſideration ought certainly to be added to the other motives which we have for improving the art of rearing them and preſerving them in health.

It is ſufficient for our purpoſe to have indicated the relations which this art bears to general medicine. I ſhall therefore abſtain from the repetition of what I have ſaid on this ſubject, as it muſt be obvious, that all the branches of the medical art are mutually connected, and illuſtrative of each other.

CHAPTER V.

On the acceſſory Branches of Study.

SECTION I.

On Natural Hiſtory.

AMONG the different ſubjects that compoſe the courſe of medical ſtudies, I have not enumerated natural hiſtory; becauſe thoſe parts of the ſcience that relate to medicine are included, either in phyſiology, which itſelf compriſes the hiſtory of the phyſical laws of animated bodies, and the deſcription of their inſtincts and habits; or in chemiſtry, which may juſtly be regarded as the general inſtrument of analyſis for all the productions of nature; or in botany, particularly that popular ſyſtem of botany above mentioned, which is ſo intimately allied to vegetable chemiſtry, and which without having, perhaps, as yet thrown much light upon the phenomena of life, has certainly made us better acquainted with the ſubſtances which enter into the organization of the living ſyſtem.

Syſtems of natural hiſtory, which are limited to the claſſification of the different productions of nature, according to their external analogies, are unqueſtionably of great uſe in the arrangement of collections: an acquaintance with the general plan upon which the claſſification of each author is formed, may even exerciſe the ingenuity, or ſtimulate the curioſity of the young ſtudent: it may aſſiſt the memory, wearied as it muſt be by ſo many efforts, with which the reaſoning powers have for the moſt part little to do: and, perhaps, may alſo ſometimes ſuggeſt uſeful views to the obſerver. But ſuch claſſifications, however methodical we may ſuppoſe them to be, can, in general, be no more called the ſcience, than a catalogue can be called a library, or a liſt of names an aſſembly of men. Reduced to this ſtate, natural hiſtory would certainly be altogether foreign to medicine, which has already but too many ſyſtems of its own.

SECTION II.

On Mechanical Philoſophy.

MECHANICAL philoſophy has diſcovered the laws, by which the motion of the celeſtial bodies is governed: it has meaſured the different diameters of the orbits which the ſtars deſcribe: and proved that theſe laws, to which all their movements are ſubjected, ſerve, at the ſame time, to regulate the courſe of the ſeaſons, and to produce all that variety of ſcenes and events which they preſent to our view. Mechanical philoſophy, too, has aſcertained the laws peculiar to that fluid, which is diffuſed in greater or leſs quantity over all the parts of the globe, and which by turns rolling upon its ſurface, or penetrating into the deepeſt abyſſes, or floating in the form of vapours in the atmoſphere, ſeems to be deſigned by nature for the renovation of all the bodies of the univerſe, and for aſſiſting their regular reproduction or continual tranſformation. The ſame ſcience, too, has been able to meaſure and weigh the atmoſphere, to eſtimate its powers, to decompoſe the rays of light, and to ſubject to calculation that univerſal and conſtant agent of nature,—motion. It has conſidered it with regard to the mechanical effects which it produces; with regard to the chemical changes which different ſubſtances undergo, in conſequence of its more or leſs forcible application; and with regard to the direct perceptions which animated beings derive from it.

We may readily perceive the relations which ſeveral of theſe ſubjects bear to the different branches of medicine. The laws of equilibrium, of denſity, of expanſion, and of the colliſion of bodies,

dies, may ſerve to illuſtrate ſeveral important queſtions of medicine and ſurgery. Not that we need go the length of aſſerting, with a celebrated author, that, when we are called to viſit a perſon who has been wounded by a fall, we cannot, without a knowledge of the laws of gravitation, determine with preciſion the extent of the injury, even though poſſeſſed of the moſt accurate information with reſpect to the height from which the patient had fallen. This mode of proving the utility of a knowledge of mechanics in the practice of medicine may appear a little ludicrous; but there cannot be a doubt, that the bodies by which we are ſurrounded, or which we employ for the common purpoſes of life, produce upon us very different impreſſions, in different circumſtances: it is therefore of great conſequence both for the cure of diſeaſes, and the preſervation of health, to be acquainted with the laws of all the changes which theſe bodies may experience.

When Hippocrates recommends the ſtudy of aſtronomy in ſo particular a manner, and as ſo neceſſary to the young phyſician, it is not that aſtronomy which calculates, by learned theories, the courſe of the heavenly bodies, to which he alludes; but the ſcience which determines the time and place of appearance, in the heavens, of certain ſtars, the different poſitions of which, with regard to the earth, regulate the ſucceſſion of the ſeaſons; or in other words, the aſtronomy of obſervation: and, in order more fully to explain his meaning, he adds, that it is for the purpoſe of becoming acquainted with the changes which the terreſtrial bodies may experience in the different ſeaſons and different ſtates of the heavens. For, he obſerves, the Sun, the Moon, Arcturus, and the Pleiades, exert a very perceptible influence upon the atmoſphere, upon the earth, and upon every thing which floats in the one, or dwells on the ſurface of the other: and in the practice of medicine, it is of great advantage to be able to refer the effects to the different phaſes of theſe ſtars upon which they ſeem directly to depend. Thus, the diſeaſes which appear with Arcturus, differ from thoſe which the Pleiades occaſion: ſeveral follow the courſe of the moon; and almoſt all are aggravated or mitigated, in proportion as the ſun recedes, or approaches to the earth.

Since the time of Hippocrates, the doctrine of the influence of the celeſtial bodies has undoubtedly been carried to an abſurd extreme. Credulous phyſicians have grounded many ridiculous fictions upon it, and quacks have employed it as the means of impoſing upon weak minds. But it is, nevertheleſs, certain, that various phenomena of life follow exactly the ſolar and lunar periods, although we are unable to conceive in what manner events ſo different and remote can be connected together. Writers of the greateſt veracity adduce a number of obſervations, which leave no room for doubt on this point; and the moſt limited practice is every day furniſhing proofs of their juſtneſs[*].

Every one knows the effects that light produces upon plants. Whether it combine with them in the proceſſes which manifeſt their peculiar life, or perform the office of a neceſſary ſtimulant for the ſupport of their functions; certain it is, that they decay and become anaſarcous, when deprived of it; and revive and reſume their colour, when it is again reſtored.

A number of facts collected by Paſcal, an Italian phyſician, whom Morgagni quotes with great commendation, ſeem to prove that, at certain hours of the day, as well as at certain lunar and ſolar epochs, deaths are more numerous than at other times: and the practitioners of all countries are agreed as to their frequent occurrence during the ſolſtices and equinoxes. Some obſervers, even, pretend to have remarked, that certain hours of the day are moſt favourable to the birth of children, and the young of ſeveral ſpecies of animals[†].

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[*] See, among other works on this ſubject, Mead *De Imperio Solis et Lunæ*.

[†] It was obſerved by my father, that young birds came out of their neſt generally towards morning. See his *Eſſay on the Principles of Grafting*.

Whatever may be our opinion of the accuracy of theſe facts, and of the conſequences which obſervers have ventured to deduce from them, their mere enunciation muſt ſerve to place, in a clearer point of view, the advantages to be derived from a knowledge of mechanical philoſophy in the practice of medicine; and it is certainly deſirable, that it ſhould form a part of the ſyſtem of inſtruction, or, at leaſt, that it ſhould be regarded as one of the neceſſary preliminary ſtudies. But a little attention ſuffices to convince us, that the points of view in which mechanical philoſophy really tends to illuſtrate our practical labours, relate to objects which, as we have found to be the caſe with natural hiſtory, are treated of in phyſiology, in materia medica, or along with the general doctrines relative to the morbid ſtate.

SECTION III.

On Mathematics.

We have already had occaſion to remark, with what little ſucceſs all attempts to apply geometry and algebra to the moſt important branches of medical ſcience have hitherto been attended*. The phenomena of life depend upon ſo many unknown cauſes, and are liable to be affected by ſo many circumſtances, which obſervation in vain endeavours to appreciate, that the relative problems, incapable as they are of being ſtated with all their data, cannot poſſibly be referred to calculation. And when the ſect of mechanical and mathematical phyſicians endeavoured to ſubject the laws of animated nature to their technical methods, they exhibited to the learned world a ſpectacle that was truly aſtoniſhing, and deſerving of all their attention. The terms of the language which they employed were exact; their methods of reaſoning were ſure; and yet all the reſults were erroneous. And, moreover, although the ſame language was uſed, and the method of applying it followed by all the calculators, yet each of them obtained a different reſult. In ſhort, it was by the uniform and rigorous methods of true reſearch, injudiciouſly applied, that the moſt abſurd, erroneous, and contrary ſyſtems were eſtabliſhed.

No one can deny the direct and extenſive advantages which have accrued to the phyſical ſciences in general, from the application of geometry and algebra. But we muſt not abuſe either: we muſt not, in particular, employ them in the inveſtigation of ſubjects where they are inadmiſſible. Whenever the objects of reſearch, or the relations which they bear to each other, are incapable of rigorous eſtimation *, the uſe of theſe valuable inſtruments becomes dangerous; for when it is not directly beneficial, it is almoſt always injurious. Beſides, it is only the inferior ſort of mathematicians who can be anxious to diſplay a ſpecies of learning not very familiar to the generality of medical readers. They alone can take pleaſure in ſeizing upon a province, their right to which has been always at leaſt very doubtful. Little advantage ſurely is to be expected from tranſlating into an unknown tongue that which common language expreſſes ſo clearly, or from transforming into a ſcientific doctrine, above the capacity of a great majority of ſtudents, that which a ſimple enunciation is ſufficient to render intelligible to every one. And in juſtice it muſt be ſaid, that thoſe who are moſt eminent for mathematical knowledge, are not very emulous of this ſort of diſtinction.

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* I am induced to return to the conſideration of this ſubject, becauſe it is of great importance, and becauſe the inſtance of the mathematical ſciences is the beſt calculated for ſhowing with how much caution ideas derived from the other ſciences ſhould be introduced into medicine.

However, as we have already obſerved, the different branches of phyſiology have not been found all equally unſuſceptible of this application

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* That is, of being computed by fixed numbers or magnitudes.

of geometry and algebra. If the cauſe of muſcular motion, and the immediate agents by which the contraction of the minute fibres is produced, are ſtill involved in obſcurity; if, in particular, it is impoſſible to refer them to the laws which govern inanimate nature: on the other hand, the force of muſcular action, or rather the calculation of the active powers employed in each movement, has been found ſuſceptible of rigorous demonſtration. The mode, in which the rays of light, in falling upon the convex ſurface of the cornea, are refracted by the various humours of the eye, ſo as to form an image upon the retina, may alſo be demonſtrated mathematically. It is true, that the ſenſation itſelf of this image, or the particular circumſtances which render us capable of being apprized of its preſence, ſtill remain enveloped in the ſame obſcurity: but the eye, conſidered as the material organ of viſion, is really reduced to the ſtate of a ſimple dioptrical inſtrument. Only its operations are more perfect than thoſe of all others; the various refractions of the rays being ſo completely corrected by its different humours, that the images are always depicted upon the retina, ſingle, well defined and circumſcribed, having nothing indiſtinct about them, and exhibiting none of thoſe different refractions, or rings, which ſurround always, more or leſs, the images produced by artificial inſtruments.

With reſpect to the function of hearing, much greater obſcurity prevails. The demonſtration of the ſtructure of the ear, by ſeveral eminent anatomiſts, has not proved ſufficient to ſhew us in what manner the different vibrations of the external air can produce ſuch a variety of delicate impreſſions upon the pulpy expanſion of the internal auditory nerve. But the vibrations of a ſonorous body, their mutual relations, the laws of their propagation through different mediums, and the rules of the combinations required for producing concords, have been aſcertained with all the preciſion of calculation: the agreeable impreſſions cauſed by muſic, have themſelves been reduced to the form of geometrical problems. The exact ſciences, therefore, are not proper objects of ſtudy for the young phyſician, on account of the phyſiological operations which they may explain: but the theory of thoſe arts, of which we ought to have at leaſt ſome general notions, in order that we may thoroughly underſtand the laws of ſenſation, borrows illuſtrations from theſe ſciences, which it could no where elſe obtain.

But it is not, perhaps, in theſe particular points of view, that they are of moſt extenſive uſe: it is not enough to conſider geometry and algebra as univerſal inſtruments of reſearch, applicable to the great majority of the objects of human curioſity, and to many of the common purpoſes of life: we muſt alſo eſtimate their advantages by the particular turn which they give to the mind. In fact, the ſcience of geometry, by improving the memory and reaſoning powers, by increaſing the force, and if we may ſay ſo, the tenacity of the imagination; by teaching, by habitual practice, the art of deducing one demonſtration from another: and the algebraic art, by elucidating, as it does, the true ideology of numeration, and the mechaniſm of analyſis; by accuſtoming the mind to the different forms which the problems muſt aſſume before they can be ſolved, and to the ſucceſſive excluſion of thoſe data which tend to embarraſs the proceſs, or which counterbalance each other; by fixing determinate limits, between which the truth muſt neceſſarily be found; by affording the means of approaching, by degrees, to the preciſe point where it is placed; by preſenting, in particular, continual examples of generalization, which the nature of the ſubjects muſt always render as juſt, as they are grand and ſtriking:—by all theſe direct and indiſputable effects, geometry and algebra may certainly become a moſt uſeful appendage to logic. By ſuch vigorous exertions as thoſe we have been deſcribing, the mind acquires greater ſtrength and activity; and it may alſo attain more quickneſs, perſpicacity, flexibility, and comprehenſiveneſs,—all qualities which it may tranſ-

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ſer with the greateſt advantage to its other ſtudies and labours.

I by no means, however, wiſh to inſinuate, that geometry and algebra are capable of correcting minds of a perverſe and untoward diſpoſition, or that a calculator, becauſe he reaſons always well, when he reſolves queſtions, the terms of which may be repreſented by quantities or numbers, will reaſon with the ſame accuracy or certainty, when he applies himſelf to ſubjects, of which the data are more various, uncertain, or mutable. Many inſtances have ſhewn, that the contrary often happens; and the mania of applying calculation to ſubjects where it is inadmiſſible, tends to place thoſe mathematicians, whoſe judgment is defective, in a ſtill more diſadvantageous light than other bad reaſoners. But the abuſe of a good inſtrument ſhould not prevent us from acknowledging its real utility.

SECTION IV.

On Philoſophical Methods.

If there be a ſcience, of which the theories and ſyſtem of inſtruction require all the perfection which philoſophical methods can impart,—it is doubtleſs medicine. The difficulties of its reſearches, the extent of its materials, and the fugitive and verſatile character of the objects of its attention, demand at once great caution and ſagacity; a flexible imagination, which can follow all the variations of the phenomena, and a ſteady judgment, which never goes beyond facts; the faculty of receiving every impreſſion in a lively manner, without allowing the mind to be governed by any one in particular. Among theſe various qualities, which ſome perſons may regard as contradictory, thoſe which depend on the manner of feeling are excluſively the gift of Nature; and all which aſſiduous culture can effect, is to improve them, and to facilitate their employment: but, on the other hand, it is by culture alone, that the reaſoning powers are developed; for the art of reaſon demands a long and difficult courſe of tuition.

We may now with confidence refer the improvement of the proceſſes of experimental inquiry to the amelioration of philoſophical methods: and it is evidently to both that we are indebted for all the beautiful diſcoveries, with which chemiſtry and natural philoſophy have in recent times been enriched. Certain it is, that from the moment when the views of Locke were introduced into the ſciences, the ſciences changed their whole appearance. Thoſe, in which the method of analyſis was, as it were, a matter of neceſſity, either from the nature of their ſubject, or from that of their deſign, had alone made ſure and regular progreſs. All the reſt will now enjoy the ſame advantage: and it is impoſſible to calculate or conceive to what pitch of improvement the human mind may, with their aſſiſtance, attain: for the real power of man reſides much more in the inſtruments he employs, than in his natural faculties. His genius is more particularly diſplayed in their invention and ſkilful application: and it is this circumſtance which forms the chief diſtinction between one individual, and between one nation and another. The methods of the human mind are, if we may uſe the compariſon, its levers and its balloons: by their aſſiſtance it may move with facility the moſt enormous maſſes, or elevate itſelf to the pure fountains of light. Let us therefore endeavour to improve theſe valuable inſtruments, to the utmoſt of our power; impreſſed with the conviction, that, if in the moſt ſimple ſtudies and enterpriſes they are of ſome uſe, they become abſolutely indiſpenſable when the objects of theſe ſtudies or enterpriſes are various and complicated: for in ſuch caſes they alone can guide our labours, and enſure our ſucceſs.

But, after the remarks upon this ſubject, which have been already made in different parts of this work, it muſt be unneceſſary to enter into farther details.

SECTION V.

On Moral Philoſophy.

We have above had occaſion to ſhew, that all the intellectual ſciences ſhould be founded upon the phyſical knowledge of the human body: but we ſhould have a very imperfect idea of the latter, if we neglected to ſtudy thoſe organic functions which conſpire to produce thought and volition, and to take into view that influence which both theſe operations exert on the whole, or on particular parts of the ſenſitive frame. Thus we ſee, that metaphyſics and moral philoſophy are equally neceſſary to the phyſician. On the former of theſe ſubjects we have already ſufficiently expatiated. With reſpect to the ſecond, as it is almoſt conſtantly connected with the details of practical medicine,

cine, it ſeems as if it were the ſiſter, rather than the attendant of the latter. The errors of the imagination, or thoſe of the paſſions and deſires, are evidently the cauſes of a great proportion of the miſeries of man. The diſeaſes even, to which he is ſubjected, generally depend on his own errors, or on thoſe of ſociety, and are always liable to aggravation from the depraved ſtate of his moral conſtitution. How much may erroneous opinions and irregular deſires diſturb the functions of the ſyſtem! How many vicious habits may they not generate in the different organs of the body! And if it be true, that vice, like inſanity, is often but a phyſical diſeaſe, how often, in their turn, are diſeaſes produced, either by inſanity, which, generally ſpeaking, may occaſion diſorder in all the living actions of the ſyſtem, or by vice, which, in reality, is merely a variety of the former!

The phyſician is doubtleſs unfit for his profeſſion, who has not learned to read in the human heart, as well as to recogniſe the preſence of the febrile ſtate; or, who in treating a diſeaſed body, cannot diſtinguiſh, in the features, in the looks, or in the ſpeech, of his patient, the ſigns of a diſordered mind, or of a wounded heart. How can he ſeize the true character of thoſe complaints, which are concealed under the ſemblance of mental emotion, or of thoſe moral diſorders, which exhibit all the ſymptoms of certain phyſical diſeaſes?

How can he reſtore its wonted ſerenity to that agitated mind, to that ſoul conſumed by a gnawing melancholy, if he is ignorant of the organic leſions, which theſe mental affections may produce, and of the derangement of the functions with which they are generally connected? How can he revive the dying flame of life, in a body drooping, or devoured by anguiſh, if he knows not what ſufferings he muſt firſt alleviate, and what idle dreams he muſt firſt diſpel?

Doubtleſs it is the duty of the phyſician to afford the ſweeteſt and moſt ſoothing conſolations to the patient couched on the bed of ſickneſs; it is he alone, who can penetrate fartheſt into the confidence of infirmity and misfortune, and, therefore, it is he who can pour the moſt ſalutary balm into their wounds. But, for the ſame reaſon, he muſt not remain ignorant of the nature and deſtiny of theſe unhappy and too feeble mortals; he muſt not be void of compaſſion for thoſe errors and miſeries which may ſo readily become the lot of every one; but he muſt be indulgent and kind, as well as circumſpect and reaſonable. Every one elſe may hate vice, and be revolted at folly: but the phyſician, if he knows how to obſerve and judge properly; if he poſſeſſes good ſenſe, if he is juſt and liberal in his ſentiments, can feel only pity for both, and can only redouble his zeal for the ſervice of thoſe degraded and unfortunate creatures, who ought to excite his compaſſion more forcibly, the more that they are inſenſible to their own unhappy ſtate.

Who has not had an opportunity of ſeeing ſome unfortunate beings, victims of their own fatal paſſions, drag on a languiſhing exiſtence towards the tomb, while they ſought for ſome expreſſions of concern, rather than for life? Who has not obſerved the cruel diſtractions of thoſe terrified imaginations, who tormenting themſelves with the tortures of their own fancy, combine ſometimes, with this mania, ſentiments of the ſublimeſt virtue? Can there be a more grateful enjoyment, than to allay theſe groundleſs alarms, theſe fictitious terrors; to cauſe the voice of reaſon to be heard amid ſuch numerous perplexities? Thoſe perſons who evince the greateſt ſenſibility and compaſſion towards others (and ſuch perſons are moſt liable to all ſorts of error) ſurely deſerve the moſt particular attention on the part of the virtuous and feeling phyſician. Could any one, who is not completely ignorant of the ſentiments which form the human heart, could any one avoid being deeply affected at the ſufferings of thoſe, who never witneſſed the ſufferings of others, without feeling an anxious wiſh to relieve them? Could he be ſparing of his care and attention to thoſe who live only by their ſocial affections?

But to return to conſiderations more ſtrictly medical: we may obſerve, that methods of cure, which are often ſimple and uniform, when applied to individuals, whoſe minds or whoſe ſenſibility have received but little culture, become very complicated, various, and difficult, when directed to perſons whoſe moral faculties have been completely developed. How many fibres may be agitated by the ſlighteſt cauſes, when the mind receives and combines a variety of impreſſions, and when many vivid emotions animate the breaſt! Not to ſpeak of the habits which are contracted by application to different trades; whenever one emerges from the ſphere of mere animal life, whenever one becomes ſeparated from the common claſs of ſociety, the treatment of each diſorder demands particular combinations of ideas, and frequently combinations of ideas which do not relate to the diſeaſe itſelf. Thus, the practice of medicine is reduced to a few ſimple rules in the country, and in hoſpitals; but it is obliged to multiply, to vary, and to combine its reſources, when applied to men of buſineſs, to men of letters, and to artiſts, and to all perſons whoſe lives are not devoted to mere manual labour.

SECTION VI.

On the Arts and Belles-Lettres.

THE formation of ideas depending, in a great meaſure, as we have already obſerved, upon the employment of the ſigns which repreſent them; and the character of theſe artificial inſtruments being neceſſarily communicated to the ideas which they have ſo powerful a tendency to engender: it is evident how abſurd the declamations of ſome profeſſional pedants, againſt the literary ſtudies of the young phyſician, are. Not, that a rhetorical ſtyle, or the ornaments of poetry, can ever be conſidered as proofs of good taſte and judgment in ſcientific compoſition: on the contrary, they ſhould be baniſhed from it with the utmoſt rigour: but the ſciences have alſo their own peculiar eloquence, which, far from disfiguring the truth, refines it, and augments its energy and force. A language that is preciſe, elegant, and, even at times, animated, diſcovers ideas, the firſt conceptions of which have originated from lively and diſtinct perceptions; the different particulars of which have been arranged with mature reflection; while a rigid judgment has circumſcribed their connections, in order to indicate, as it were by anticipation, all the concluſions that flow from them.

Several writers, of conſiderable merit in other reſpects, owe the greater part of their errors to the barbarous ſtyle in which they have indulged: and, on the other hand, we may remark, that the moſt judicious inquirers are indebted for their happieſt views, to the clearneſs, the preciſion, and the purity of language, which they have ſtudied in their works. If, for example, Stahl had not adopted that ſcholaſtic and uncouth jargon which renders the peruſal of his writings ſo irkſome; if he had not completely loſt himſelf, as it were at pleaſure, in that obſcure ſtyle, that diſcordant mixture of Greek, Latin, and German, he might ſtill, no doubt, have been at times inclined to conceal the original ſources of his ideas; but he ſurely never would have disfigured them in ſo ridiculous a manner, nor have ſown the ſeeds of ſo many errors, in the mode of expreſſing himſelf. All the works of Hippocrates, that is, all thoſe which are indiſputably his, not only abound in ſtriking and valuable, as well as enlarged and ſublime ideas; but the ſtyle of them is uniformly rapid, preciſe, eaſy, and pure. This ſtyle is certainly not that of Plato, of Demoſthenes, of Xenophon, or of Lucian, but it may be ſaid to equal them all in its way; and we recogniſe, in particular, the greatneſs of the writer, in this very attention to preſerve the manner and tone which agree beſt with his ſubjects. Although he always avoids ſhewing himſelf to be the pupil of the moſt celebrated orators of his age, yet it is impoſſible not to diſcover from a peruſal of his works, that all the beauties of language are familiar to him, and that his talent is the more perfect, as he knows ſo well how to conceal the art, in the rapid flow of his thoughts, and under that ſeeming inattention, which their copiouſneſs, and the little time that remains for their arrangement, appear to create.

If truth often ſhew itſelf in the character of the ſtyle; if it become, as it were, more perfect, by what ſeems at firſt ſight to be merely its dreſs; it is of much more importance with reſpect to its diffuſion, that it be diſplayed in the form beſt calculated to attract our attention, and to ſtimulate our curioſity. The moſt juſt ideas ſeldom or never form part of public opinion, till after having paſſed through the hands of men of talent: and it is ſufficiently apparent, that the prejudices which they ſanction, are always the moſt difficult to eradicate.

We muſt not, however, forget, that the proper culture of the mind is acquired by a number of different impreſſions. Of this a ſingle example may ſuffice. The ſcience of man is undoubtedly applicable to all the practical purpoſes of life, and is even abſolutely neceſſary to every one who lives in ſociety. Now, it is obvious, that certain works, which are commonly regarded as mere matters of amuſement, preſent the only faithful pictures of human nature, which we poſſeſs; that the perſon who can read them and apply them to real life, acquires greater experience of the world, than the whole tribe of moraliſts can boaſt. And we may add that their peruſal, while it refines the mind, rouſes at the ſame time its activity; and that the agreeable images which it offers to view, ſerve not only to amuſe it after drier ſtudies, but enable it to reſume the latter with increaſed delight.

The ſame remarks may be extended to the arts: not that one man can be ſuppoſed capable of attending maturely to ſo many objects at once; but becauſe it is of importance to enlarge and improve the ſenſibility, by directing it ſucceſſively to different ſorts of impreſſions.—For the various perceptions we acquire, when they are lively, diſtinct, and accurate, neceſſarily leave, in the mind, many valuable materials from which the judgment ſooner or later muſt derive advantage. Beſides, the different languages of the paſſions ſhould be familiar to thoſe whoſe courſe of ſtudy embraces the whole ſcience of man.

We ſee, then, under what relations, and to what extent, the culture of literature and the polite arts is connected with the ſeverer ſtudies of medicine.

SECTION VII.

On Ancient and Modern Languages.

DURING a long period of time, the ſtudy of languages formed, in a manner, the baſis of the ſyſtem of education purſued: a great part of infancy and youth was conſumed in it: and this deſcription of learning became an object of ambition, a path to preferment. As long as the Greek and Latin authors were our only preceptors, this was certainly ſo far proper; it was then no leſs neceſſary to be acquainted with the languages of both, in order to inform ourſelves of their acquiſitions in the different branches of learning, than it is at preſent to be an algebraiſt and geometrician, in order to become an aſtronomer, engineer, or navigator. But ſince the modern languages, at leaſt thoſe of civilized nations, have furniſhed excellent books upon almoſt every ſubject of inquiry, an acquaintance with the languages of antiquity has become leſs requiſite; and they have conſequently been leſs ardently cultivated.

Some philoſophers have gone much greater lengths than the public; and have condemned the ſtudy of languages as cauſing a loſs of valuable time, and as tending to enervate the powers of the underſtanding, by exerciſing only that ſpecies of memory which is moſt remotely allied with reaſoning. They affirm, that good tranſlations may ſupply us with all the uſeful matter which the books written in dead or foreign languages contain: and as to the particular beauties of ſtyle which they exhibit, the length of time required for enabling us to reliſh them, is, in their minds, too great a ſacrifice to be compenſated by enjoyments from which no ſolid advantages are derived.

Notwithſtanding the authorities which may be adduced in favour of this opinion, I cannot, I muſt confeſs, by any means aſſent to it.

In the firſt place, the ſtudy of language, conducted in a philoſophical manner, throws conſiderable light upon the operations of the human underſtanding; and the uſeful views which it ſuggeſts cannot be regarded as complete till they have been deduced from the compariſon of ſeveral different idioms. It is neceſſary to be acquainted with the various order in which our ideas, or the elements of which they are compoſed, may be exhibited or reproduced, if we wiſh to avoid many errors relative to their natural order, and, perhaps, even to their formation;—errors which it is difficult to obviate, and impoſſible to correct, when we take into view only one combination of ſigns. Secondly, the impreſſion made by the ſame ideas, expreſſed in different languages, is far from being the ſame. It will not be denied, that the art of ſpeaking and writing well conſiſts in the ability to excite, in others, the train of ideas and ſentiments with which the writer is himſelf inſpired, or, rather, to revive the perceptions which produced theſe ideas and ſentiments, and to confirm them by the addition of others which may render their effects more powerful or diſtinct. Now, by this art, we may transfer certain ſtriking ideas from the ancient languages to thoſe which we at preſent employ, and in this manner improve, by ſucceſsful tranſlations, thoſe neceſſary inſtruments of the human underſtanding. Nothing, certainly, can tend more to ſtrengthen the mind, and to quicken its operations, or to furniſh the memory with a greater ſtore of conceptions, and varied turns and images of thought, than the peruſal of the beſt writers in different languages: and the inſtruction to be reaped from them is always very imperfect, when we have not ſtudied, in their original and inimitable form, the ideas of thoſe men of tranſcendent genius, who deſerve, on many accounts, to be ranked among the benefactors of the human race.

Many writers. in fine, who are well worthy of being read, and from whoſe works we may obtain much uſeful or even neceſſary knowledge, have not yet been generally tranſlated into the languages of thoſe countries which are furtheſt advanced in civilization and refinement. And we are often obliged to ſearch for information in the languages of antiquity, or in thoſe of cotemporary nations.

To confine ourſelves, however, to medicine: it is univerſally acknowledged, that a number of excellent books, which treat of this ſcience, are compoſed in Latin, and others in Engliſh, Italian, and German; and of theſe books, ſeveral are not tranſlated at all, or are tranſlated in ſo ſlovenly a manner, that the ſubject of them is, in a manner, burleſqued. The Greek writers, for example, have loſt their peculiar tone and character in thoſe Latin verſions, which their modern diſciples have left us; and in the greater part of the French tranſlations they are perhaps ſtill more disfigured. The Latins, although more nearly allied to us in ſituation, cuſtoms, and language, have, in general, equal cauſe to complain of the tranſlators of their works; upon which point I may appeal to the few among the latter who deſerve to be ranked as exceptions to this general cenſure, and who will readily admit, that they have never been able to equal their originals, and that the reader, who is acquainted with the great writers of antiquity only through the medium of tranſlations, can form no true idea of their works.

The ſtudy of languages, therefore, ſhould not be neglected in a courſe of general education, and ſhould be particularly attended to in the education

tion of thoſe young men, who are intended for the medical profeſſion.

It is evident, however, that the different ſubjects of which we have treated in this laſt part of our work, cannot be conſidered as directly belonging to a courſe of medical ſtudies; but ſome of them muſt be regarded as eſſential preliminaries, while others form very uſeful additions to it. Once more, let us remember, that in the ſciences every thing is connected; that the more we know of them, the more new relations we ſhall diſcover between them; and although the infirmity of our faculties and the ſhortneſs of human life do not allow us to embrace the whole ſphere of knowledge, yet the man of real genius ought not to remain a ſtranger to thoſe acquirements, from which he may borrow, were it only in a very indirect manner, ſome information and aſſiſtance with regard to the ordinary and principal objects of his labours.

CONCLUSION.

SUCH have been the principal revolutions of medical ſcience: ſuch are the obſervations which its preſent condition appears to me calculated to ſuggeſt, whether we conſider it in itſelf, or compare it with the other branches of our knowledge, in order to determine their reciprocal relations: ſuch, in fine, are the views, which, in my opinion, ſhould guide its reform, and direct its plan of inſtruction. Although theſe views and obſervations are not all equally important or original, yet I believe they will be found poſſeſſed of ſome utility: and although a performance of the nature of the preſent holds forth little proſpect of renown, I regard it as a duty incumbent upon me to offer the reſult of my labours to the public. If it contained only a ſingle uſeful idea, I ſhould think myſelf fortunate in having preſented it to thoſe young ſtudents of the art, on whom the faireſt hopes of its advancement depend.

The preſent period is one of thoſe great epochs of hiſtory, towards which poſterity will often look back, and of which it will expect a juſt account from thoſe who had it in their power to accelerate and confirm the progreſs of the human mind, in the paths of amelioration. It is the lot of only a ſmall number of fortunate individuals to exerciſe this extenſive influence: but in the preſent advanced ſtate of the arts and ſciences, there is no one who may not, in ſome meaſure, contribute to their progreſs. The leaſt real improvement in the moſt obſcure art is quickly extended to all the reſt, and the relations which have been eſtabliſhed between the different objects of our labours, enable them all to benefit by the progreſs of each in particular. The ancients had, no doubt, a diſtant idea of theſe relations; and had perceived, that all the arts and ſciences were connected together, and formed, as it were, a complete whole: but they had remarked this, without perceiving it diſtinctly, and had attempted to deſcribe it, without knowing it thoroughly. It is only in recent times; it is only after having conſidered the various efforts of human induſtry in all their applications, and in all the different directions which they may aſſume; it is only after having ſubjected them to rules, and reduced them to common forms, that we have been enabled to determine with accuracy the mutual relations which connect them, and the influence which they exert, or are capable of exerting upon one another. We now know, and can demonſtrate, that there is nothing inſulated in the labours of man: they are united, if we may borrow the compariſon, as nations are by their commercial ties: they mutually aſſiſt each other, like the members of the ſocial community.

The moſt obſcure individuals, therefore, have it now in their power to render themſelves eminently uſeful: men of ſcience and letters, to whatever branches of reſearch they devote their attention, artiſts, and even the meaneſt mechanics, all in their particular ſpheres, may now promote the general good, and contribute to the progreſſive improvement of the human race.

And ſhall we, then, who, devoting ourſelves to the alleviation of the ſufferings of mankind, ſo frequently command the intereſts that are deareſt to the heart; we, whom the high importance of theſe intereſts obliges us to ſearch for information in all quarters, and whoſe ſtudies embrace almoſt all the branches of phyſical and moral reſearch;—ſhall we alone be exempted from the duty of promoting the general welfare of mankind by our labours, and of contributing to their amelioration? Undoubtedly not. Let us, therefore, unite our efforts, and endeavour to introduce into the ſtudy and practice of our art, that ſuperior reaſon and philoſophy, without which ſo far is it from affording uſeful aid, that it becomes a real public ſcourge: let us venture to connect it by new relations with the other branches of human knowledge; ſo that the latter, by its means, may be improved and illuſtrated. And at a time when the

French Nation is about to conſolidate its exiſtence as a republic, let medicine, reſtored to its native dignity, commence a new career, which may prove both rich in glory, and fruitful in benefits to mankind.

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NOTE [A], page 29.

Upon what authority M. Cabanis grounds this aſſertion, reſpecting Acron and Hippocrates, it appears not very eaſy to determine. All the writers, whom I have had an opportunity of conſulting, agree in deſcribing Acron of Agrigentum as having ſtayed the plague, not at *Agrigentum,* but at *Athens,* and that, not by blocking up particular paſſages in the mountains, but by cauſing piles of wood to be burnt near the infected perſons,—in other words, by *fumigations.* He is thus mentioned by Plutarch, as having afforded relief to numbers during the Great Athenian Plague: *Ἄκρωνα γοῦν τὸν ἰατρὸν ἐν Ἀθήναις ὑπὸ τὸν μέγαν λοιμὸν εὐδοκιμῆσαι λέγουσι, πῦρ κελεύοντα παρακάιειν τοῖς νοσοῦσιν· ὤνησε γὰρ οὐκ ὀλίγους.* *De Iſid. et Oſir.* Op. Tom. VII. p. 506. (Ed. Reiſke); and in a ſimilar manner by Paulus Ægineta and Aëtius, in the following paſſages: "Porro ſi quiſpiam ingentem lignorum ſtruem accenderit, egregie quidem udum aëra in calidum et ſiccum poterit convertere, quemadmodum et Acronem Agrigentinum feciſſe perhibent." P. Ægineta *De Re Medica,* lib. II. c. 34 (Interpr. Torino). "Sed et rogo ingenti extructo et intenſo, aërem ad caliditatem ac ſiccitatem tranſmutare quis poteſt, humidum et frigidum factum; quemadmodum Hippocratem Athenis feciſſe dicunt. Itemque Acronem Agrigentinum." Aetii *Tetrab. Sec.* S. I. C. XCIV. p. 246. (Ed. Baſil. 1542.)

What ſeems to have led the author into the miſtake, is the relation of Plutarch reſpecting Empedocles, the cotemporary and fellow citizen of Acron, who is deſcribed as having freed his country from peſtilence by means ſimilar to thoſe mentioned in the text, that is, by cloſing certain apertures in a mountain, through which the *Scirocco* blew upon the plain. Ὁ δὲ φυσικὸς Ἐμπεδοκλῆς ὄρους τινὰ διασφάγα, βαρὺν καὶ νοσώδη κατὰ τῶν πεδίων τὸν νότον ἐμπνέουσαν, ἐμφράξας, λοιμὸν ἔδοξεν ἐκκλεῖσαι τῆς χώρας. *De Curioſitate.* Op. Tom. VIII. p. 47. Vid. et lib. *Adverſus Colotem.*

With reſpect to Hippocrates, we ſhall afterwards have occaſion to ſhew, that there is reaſon to doubt his having been at Athens during the time of the Great Plague. At all events the authors who affirm the fact, and among others Aëtius, as we have ſeen from the paſſage above quoted, deſcribe him as having employed the ſame preventive as Acron.

NOTE [B], page 62.

The tradition, that Acron was the founder of the Empirical Sect of Phyſicians, reſts chiefly upon the authority of Pliny, who, in deſcribing the progreſs of medicine obſerves, "Alia factio, ab experimentis ſe cognominans Empiricen, "cœpit in Sicilia, Acronė Agrigentino, Empedoclis phyſici "auctoritate, commendato." *Hiſt. Nat.* lib. 29. c. i. The beſt hiſtorians, however, are of opinion, that its eſtabliſhment bears a much later date, and that *Philinus* of Cos, a diſciple of Herophilus, who flouriſhed about the CXXIIId. Olympiad, was the real founder of the ſect. The author of the "Introduction," inſerted among Galen's works, inſinuates, that Philinus was indebted to Herophilus for the firſt hints of his ſyſtem. Τῆς δὲ ἐμπειρικῆς προέστησεν Φιλῖνος Κῶος, ὁ πρῶτος αὐτὴν ἀπὸ τῆς λογικῆς αἱρέσεως ἀποτεμνόμενος, τὰς ἀφορμὰς λαβὼν παρὰ Ἡροφίλου, ὗ καὶ ἀκουστὴς ἐγένετο. *Iſagog.* Galen. Op. (Ed. Charter.) Tom. II. p. 363.

His followers, however, deſiring to give to their doctrines the ſanction of antiquity, aſcribed them to Acron of Agrigentum. Θέλοντες δὲ ἀπαρχάιζειν ἑαυτῶν τὴν ἅιρεσιν, ἵνα ἦ πρεσβυτέρα τῆς λογικῆς, Ἄκρωνα τὸν Ἀκραγαντῖνον φασὶ ἄρξασθαι αὐτήν. *Ibid.*—Of the latter it is related by Diogenes, that he compoſed ſeveral works on Medicine and Dietetics in the Doric dialect; but theſe no longer exiſt: and with reſpect to his opinions on medical ſubjects, we are wholly ignorant. Perhaps, as has been conjectured by Sprengel, he was diſtinguiſhed chiefly by his rejection of theory, and by his contempt for the myſtical dealings of his cotemporary Empedocles, and thence came to be regarded by the Empirics of ſucceeding ages, as the firſt who had introduced the peculiar tenets of their ſect.

NOTE [C], page 73.

Respecting the origin of the Gymnaſtic Syſtem of medicine, we are informed by Plato, that Herodicus was led to conceive the firſt idea of it from the benefit which he experienced in his own caſe from the uſe of exerciſe. "The dietetic part of medicine," he ſays, "had been neglected by the Aſclepiades, and, indeed, could ſcarcely be ſaid to exiſt before the time of Herodicus.—Herodicus, who was a teacher of youth, being of a ſickly habit of body, combined Gymnaſtics with medicine, and haraſſed, firſt, himſelf, and, afterwards, many others, by the immoderate uſe of exerciſe." Ὅτι τῇ παιδαγωγικῇ τῶν νοση-

μάτων, ταύτῃ τῇ νῦν ἰατρικῇ, πρότου Ἀσκληπιάδαι οὐκ ἐχρῶντο, πρὶν Ἡρόδικον γενέσθαι. Ἡρόδικος γὰρ, παιδοτρίϐης ὢν, καὶ νοσώδης γενόμενος, μίξας γυμναϛικὴν ἰατρικῇ, ἀπέκναισε πρῶτον μὲν καὶ μάλιϛα ἑαυτὸν, ἔπειτ' ἄλλους ὕϛερον πολλούς. Plato. *De Republica*. lib. III. Op. (Ed. Serran). Tom. II. p. 406.

The ſame author expatiates upon the dangers and inconveniences of this plan of treatment, and, in another paſſage of his works, ſhews to what an abſurd extreme it was often carried by its inventor. To one of his patients, for example, Herodicus preſcribed a pedeſtrian excurſion from Athens to Megara, a diſtance of 180 ſtadia, or upwards of 20 Engliſh miles, but with the expreſs injunction, that when he got to the walls of Megara, he ſhould ſtraightway return to Athens! Plato. *Phædr.* Op. (Ed. Serran). Tom. III. p. 227.

NOTE [D], p. 83.

Although the Author, in his account of the life of Hippocrates, has by no means adopted all the narrations of his biographers, yet he appears to have admitted ſeveral which will not bear a ſtrict examination. The hiſtory of the birth, education, and travels, of Hippocrates, is tolerably correct; but all the other particulars mentioned in the text are, at leaſt, very queſtionable. As neither Hippocrates himſelf, nor the cotemporary writers, nor thoſe who lived ſoon after his time, detail the actions of his life, little is known with certainty concerning him. To the narrative of Soranus no credit can be attached; nor are the traditions handed down to us by Ælian and Diogenes Laërtius entitled to greater belief.

Thus, the cure of the young Perdiccas, on which ſo much ſtreſs is laid in the text, is generally ſuppoſed to be fictitious, and to have originated from the report of a ſimilar cure, ſaid to have been effected by Eraſiſtratus. The account of the interview between Hippocrates and Democritus is not ſupported by any ſatisfactory evidence. The ſtory, too, of Hippocrates having been invited to Perſia by Artaxerxes, ſeems equally devoid of foundation: and, notwithſtanding the authorities which have been adduced in proof of the aſſertion, it may be queſtioned, whether Hippocrates ever ſignalized himſelf by checking the progreſs of the plague at Athens. Galen, indeed, agrees ſo far with Soranus, in his account of the plague which Hippocrates is ſaid to have ſtopped; but the ſilence of Thucydides on the ſubject affords a ſtrong preſumption, that this relation, alſo, is entirely fabulous. “Il y a plus d'apparence,” ſays M. Le Clerc, “que ce que diſent Aëtius et Galien, ou “l'auteur du livre *De la Theriaque,* eſt ſuppoſé, et qu'ils “imputent à Hippocrate ce que Plutarque a dit, avec plus “de vraiſemblance, d' *Acron,* qui étoit quelque tems “avant Hippocrate. S'il y a eu d'ailleurs une peſte qui ſoit “venue d' Illyrie, c'eſt ce que nous ne ſavons pas.” *Hiſtoire de la Médecine*—p. 245, Amſt. 1723.

A ſimilar opinion is expreſſed by Dr. Ackermann, in the excellent account which he has given of Hippocrates' life and writings, in FABRICIUS' *Bibliotheca Græca.* “Hinc, “quam fidem mereantur,” he obſerves in concluſion, “narrationes de honoribus Hippocrati Athenis habitis, de eo “Eleuſiniis Sacris ab Athenienſibus initiato, de alimentis “ipſi poſteriſque ſuis in Prytaneo datis, quoque perſpicitur; “ipſe enim Hippocrates, in libris quos ipſe ſcripſit, nec “morborum, quos in Attica obſervaverit, nec Athenarum

" adeo mentionem facit." *Biblioth. Græc.* (Ed. Harles). Tom. II. p. 512.

The ſame intelligent critic has, with great appearance of reaſon, conjectured, that theſe fables were all invented after the death of Hippocrates, and aſcribed to him by the followers of the Dogmatic Sect, of which he was regarded as the founder. " Hæc omnia poſt obitum Hippocratis demum excogitata ſunt a medicis, qui Rationalem Sectam, " cujus auctorem Hippocratem eſſe putabant, profitebantur, quique eo majorem gloriam ſuæ ſectæ conciliari " arbitrabantur, quo majore gloria Hippocratem floruiſſe, " dum viveret, aliis perſuadere poſſent. Hanc ob cauſam " Epiſtolæ, quæ Hippocrati adſcribuntur, in primis conſcriptæ eſſe videntur, in quibus quoque de Democriti " famoſa curatione ab Abderitis petita, nec non de Hippocrate ad Artaxerxen, Perſarum regem, per Hyſtanidem Helleſponti Præfectum, vocato, ſed Barbaris operam " pertinaciter negante, hiſtoriæ et complura alia hujus generis narrantur." *Ibid.* p. 512—13.

NOTE [E], page 87.

Of the numerous writings attributed to Hippocrates, very few are now recogniſed as genuine: and even theſe have not been tranſmitted to us free from interpolations and other changes in the connection and arrangement of the materials, which his tranſcribers, commentators, and followers, have, from various motives, been induced to make. Such of them, however, as are leaſt disfigured by theſe corruptions, are diſtinguiſhed by a remarkable conciſeneſs, and, as it were, compreſſion of ſtyle, which at times, indeed, borders upon obſcurity. Upon this characteriſtic, and upon his uſe of the moſt common and familiar terms, in preference to far-fetched expreſſions, the moſt acute commentators of his works, and eſpecially Galen, who from the time in which he lived, and his intimate knowledge of the Greek tongue, may be ſuppoſed to have been very competent to the taſk of deciding upon their merits, have reſted the proofs of their authenticity.

Of the works regarded as ſpurious, ſome appear to have been the compoſition of different individuals of the ſame name, either anceſtors or ſucceſſors of Hippocrates the ſon of Heraclides, and to have been erroneouſly aſcribed, from the ignorance of his annotators, or the vanity of his adherents, to one and the ſame individual. Thus the treatiſes Περὶ ἀγμῶν, and Περὶ ἀρθρῶν, are ſuppoſed to have been written by Hippocrates, the ſon of Gnoſidicus, and father of Heraclides; while Hippocrates III. and IV. grandſons of Hippocrates II. are the reputed authors of ſeveral of the Books of *Epidemics*, &c. The reſt, from the ſtyle in which they are written, from the mention of opinions which were not current in Hippocrates' time, or of facts and diſcoveries which bear a much later date, are all rejected as ſuppoſititious.

I ſhall, in this place, content myſelf with mentioning briefly the works generally eſteemed original, and thoſe which M. Cabanis has given as ſuch, but which there is reaſon to believe to be ſpurious. In this account I ſhall principally follow Ackermann, to whoſe learned critique the reader is referred for more ample details.

1. The Firſt and Third Books of *Epidemics* are univerſally acknowledged as the compoſition of Hippocrates.
2. The Book on *Prognoſtics* has all the characters of authenticity.
3. The Firſt and Second Books of *Predictions* are alſo by Hippocrates, but with the interpolations of others.
4. The Books of *Aphoriſms*,

5. The Treatiſe *On the Diet in Acute Diſeaſes*,
6. The Eſſay *On Air, Waters, and Soils*, and
7. The Treatiſe *On the Wounds of the Head*, are allowed to be genuine.

On the contrary, among the works particularized by M. Cabanis, the Anatomical treatiſes, the remaining Books of *Epidemics*, the general diſcourſes on the ſtudy of medicine, and the Letters, are accounted ſuppoſititious. The Treatiſe Περὶ *καρδίης*, which is praiſed in a ſubſequent part of the work for its accuracy, is mentioned neither by Erotianus nor Galen. Beſides, it takes notice of the diſcovery of the *valves* of the heart, which is univerſally attributed to Eraſiſtratus.—The Eſſay Περὶ *ἀρχαίης ἰητρικῆς* is mentioned by Erotianus, but paſſed over in ſilence by Galen, and by the generality of critics is regarded as ſpurious. Haller, indeed, has ſhewn, that it was not written till after the time of Ariſtotle. The Eſſay Περὶ *τέχνης*, which is alſo commended by our Author, is noticed by Erotianus, and aſcribed by Suidas to Hippocrates, the ſon of Gnoſidicus, but is not reputed original. Laſtly, the Letters of Hippocrates, as we have already obſerved, are all believed to be fictitious. " De Epiſtolis Hippocratis quod ex me quæris," ſays Scaliger in a letter to Vorſtius, " antiquas eas eſſe ſcio, ut Democriti, Solonis, Pittaci Mitilenæi, quæ apud Laertium " leguntur. Sed quia omnes illas, quæ illis philoſophis a " Laertio attribuuntur, multis argumentis confictas a Græcis, quibus nunquam mentiendi voluntas aut facultas defuit, probare poſſum; ideo cur et de his Hippocratis " dubitem juſtiſſima cauſa eſt. Et certe, ſi animi nervos " intendere velim, facile non eſſe Hippocratis vincam. " Unicuique judicium ſuum relinquimus; tutius tamen eſt de " eo dubitare, quod facilius eſt confutare, quam aſſerere." Joseph. Scal. *Epiſt.* CCCVI. The letter, mentioned in the text, in which Hippocrates is invited by the Abderites to viſit Democritus, has been ſhewn by Reland to be the compoſition of Epictetus.

NOTE [F], page 108.

The firſt deſcription of the Small-pox was given, not by Rhazes, but by *Ahrun*, an Arabian phyſician, the cotemporary of Paulus Ægineta, who lived nearly 300 years before the time of Rhazes. His work, conſiſting of thirty books, to which he gave the name of Pandects, is the moſt ancient of all the medical writings of the Arabians. But although it was tranſlated into Syriac by one or more perſons, it is no longer in exiſtence. Numerous extracts from it, however, have been preſerved by Rhazes, and, among others, his deſcription of the ſmall-pox, which he ſuppoſes to proceed from a corrupt ſtate of the fluids, and the efferveſcence of the blood with the bile, "ex malo ſanguine aduſto cum colera." His prognoſis is better than his method of cure, which is inert and not very judicious. In the commencement of the diſeaſe, he orders the patient to be kept warm, leſt the eruption ſhould be repelled, and preſcribes the uſe of demulcent drinks and gargles. When the eruption has run its courſe, he gives the following directions: "Cum ſint digeſtæ (variolæ), jaceat patiens ſuper farina *rizi*, et fumigetur cum foliis *myrti* et *olivarum*, et deſiccabuntur." Rhazes *Continent.* lib. XXX. (Ed. Surian.) fol. 422. Venet. 1542.

NOTE [G], page 128.

The origin of the Venereal Diſeaſe, notwithſtanding the many laborious reſearches which have been inſtituted with a view a view to aſcertain it, ſtill remains involved in obſcurity. The idea moſt generally received in this country, that it was brought into Europe by the diſcoverers of the New World, is far from being proved by ſatisfactory evidence, though it has been adopted by ſome of our beſt and moſt accurate hiſtorians. Sprengel, in the Second Volume of his *Hiſtory of Medicine*, has entered into an examination of the various opinions that have been maintained on the ſubject, and endeavoured to determine their reſpective merits. As the diſſertation to which I allude gives a clear and diſtinct ſtatement of the queſtion, and is much more complete, than any thing which it is in my power to furniſh, I ſhall here give an abſtract of it, regretting, that my limits prevent me from tranſlating it at full length.

1. The aſſertion, that Siphylis was introduced into Europe, from America, is not confirmed by competent teſtimony. The firſt writer who countenanced this opinion, appears to have been one Leonard Schmauſs, a phyſician of Straſburg, whoſe works were publiſhed in the year 1518. His evidence, however, cannot be conſidered as by any means deciſive of the point in diſpute, ſince his proofs reſt chiefly on the illuſory notion, that in thoſe countries, where endemical diſorders prevail, Nature has always provided the means of their cure. Thus, the Weſt Indies produce the Guaiac ; conſequently, the Venereal diſeaſe muſt have originated there. The ſame argument is uſed by Guicciardini and numberleſs other authors. Nor can much ſtreſs be laid on the appeals to the teſtimony of the firſt diſcoverers of the New World, as from the narratives of the hiſtorians of their expeditions, we are not entitled to infer, that the Venereal diſeaſe was known to the Americans, before their intercourſe with the inhabitants of Europe. Only it appears, that in ſome of the Weſt Indian Iſlands, there

prevailed a diſorder, termed by the natives *Caracaracol*, reſembling the itch, and ſuppoſed to proceed from great acrimony of the fluids. Gonçalo Hernandez de Oviedo, who had been *Adelantado*, or Governor, in Darien and St. Domingo, affirms, in the moſt poſitive manner, that the Venereal diſeaſe was imported from America by the Spaniards, and by them communicated to the Neapolitans, at the time of the expedition of Gonçalvo de Cordova. But the account given us of the character of Oviedo, by the moſt impartial and authentic hiſtorians, as Herrera, Ferdinand Columbus, Las Caſas, and others, naturally leads us to view his aſſeverations with miſtruſt. Governing the Americans, whom fortune had ſubjected to his power, with the greateſt cruelty and oppreſſion, he endeavoured to exculpate his conduct by ſhewing, that that unhappy people deſerved no better treatment; and he left no means untried to inſpire the Emperor Charles V. with the belief, that the Weſt Indians were the moſt vicious and incorrigible race of men, and ought to be wholly exterminated from the face of the earth. The later writers on the ſubject ſeem to have borrowed their proofs from the above-mentioned ſources.

2. It is extremely improbable, that the Venereal diſeaſe ſhould have originated among a people, whoſe manners were ſo ſimple, and who could not, without great injuſtice, be accuſed of thoſe vices which are introduced only by luxury. That a peculiar ſpecies of leproſy was prevalent among them, appears from the teſtimony of ſeveral travellers of undoubted veracity: but its identity with ſiphylis is by no means eſtabliſhed. It is, alſo, worthy of remark, that, in the Iſland of Hiſpaniola, the ancient names of the latter bore no reſemblance to that of this endemical diſorder, the *Caracaracol*, it being there termed *Guaynara, Hipa, Tayba*, or *Yça*.

3. Towards the end of the fifteenth century, the local ſymptoms of ſiphylis appear to have increaſed in variety and frequency, in proportion as leprous affections became leſs common. From a very remarkable paſſage in Windeck's *Chronicle*, it may be inferred, that, ſo early as the year 1414, King Ladiſlaus of Naples fell a victim to this diſorder.

4. The true Venereal diſeaſe, however, made its appearance, in the ſummer of the year 1493, almoſt at the ſame time throughout the greater part of Europe. On the 4th of March, 1493, Columbus, on his return from his firſt expedition, landed at Liſbon. On the 13th of the ſame month he arrived in the port of Palos, and about the beginning of April he reached Seville. Now, in the commencement of the ſummer of 1493, the Venereal diſeaſe had already ſhewn itſelf in Auvergne, in Lombardy and other parts of Italy: and, in the courſe of the ſame ſummer, it was obſerved at Halle in Saxony, in the Dutchy of Brandenburg, at Brunſwick, and at Mecklenburg. Thus, we ſee how little confidence is to be placed in the accounts of its introduction from America by the Spaniards, and conſequent diffuſion through Europe; and how contradictory to fact is the relation of Oviedo, who affirms, that the diſeaſe was firſt brought into Italy, by Cordova's fleet, which did not arrive at Meſſina till the 24th of May, 1495. The troops of this expedition could no longer have any communication with Charles the Eighth's army; and yet it is known, that on the return of the latter to France, the Venereal diſeaſe, which had already exiſted for about two years, extended its ravages very widely.

5. Nor can the expulſion of the Jews, or *Marranos*, as they were called, from Spain, afford a ſatisfactory explanation of the ſudden and extenſive diffuſion of ſiphylis. About the year 1487, a number of theſe unfortunate men

took refuge in Italy, in order to ſave themſelves from the implacable fury of the Inquiſition, whoſe rage had been exaſperated by an inſurrection at Saragoſſa, in which one of the Inquiſitors loſt his life. But in 1492, an edict was iſſued, at the inſtigation of the Grand Inquiſitor, Torquemada, by which all the Jews in Spain were ordered to quit the royal dominions, within the ſpace of four months, and at the ſame time prohibited from taking any money or other valuables along with them. In conſequence of this decree, about 170,000 families, or 800,000 perſons, were baniſhed from the kingdom, a conſiderable number of whom were conveyed, at the public expenſe, from Andaluſia, to different parts of Africa, France, Italy, and Greece. Of theſe, many contrived to gain admittance into Rome, where, notwithſtanding the urgent repreſentations of the Spaniſh Ambaſſador, they were allowed to remain after receiving the papal abſolution. In the month of July, 1493, the plague broke forth at Rome, and is ſaid by Infeſſura to have proceeded from the Jews. They were alſo accuſed of having introduced a contagious diſorder, which, ſome weeks afterwards, prevailed at Naples, and by which upwards of 20,000 perſons were carried off in the city of Naples alone. From the concurrent teſtimony of different authors, it appears, that the *Marranos* were much given to debauchery, that leprous diſorders were very common among them, and that an immenſe number of them died of the plague on their paſſage from Spain: and it is even aſſerted by ſome, that the Venereal diſeaſe firſt appeared among them. But theſe accuſations muſt be in part aſcribed to the national hatred with which they were ſo long purſued. At all events, there is no certain evidence of the diſorder having thus originated.

6. At firſt, the Venereal diſeaſe ſeems to have been very ſimilar in its nature to leproſy and other impetiginous diſorders,

orders, attacking chiefly the ſkin, and producing malignant ſcabious eruptions. Hence, before the time of Leonicenus, it was very generally believed to be a variety of elephantiaſis, or yaws, and was called *Formica, Morphea*, &c. In the beginning of the ſixteenth century, ſiphylis loſt its leprous character; the ſymptom of gonorrhœa ſupervened; and it gradually aſſumed its preſent form.

7. That the diſeaſe was originally of a peſtilent nature, and attacked a far greater number of perſons, than could well be ſuppoſed to have received it from ſimple infection, may be inferred from the ideas which prevailed with reſpect to its origin. Thus, it was attributed to the malignant influence of the ſtars, particularly of Saturn, the Devourer of children, in his various conjunctions and oppoſitions. Leonicenus derives it from the general inundations that occurred in the years 1493 and 1528. In fine, the ſymptoms of ſiphylis were by many ſuppoſed to proceed, from acrimonies of the fluids, the depoſition of a bilious matter in particular parts of the body, &c.

8. Theſe ideas ſerved to ſuggeſt the method of cure. At firſt, correctives of the blood, evacuant medicines, veneſection, and other ſimilar means, were employed. So early as the year 1497, mercury was exhibited externally in ſiphylis, but was not very freely uſed. About the year 1517, guaiac was recommended as a ſpecific for this diſorder, and ſupplanted the uſe of mercury, till Paracelſus again introduced the latter, and demonſtrated its ſuperior efficacy. SPRENGEL *Geſchichte der Arzneykunde* (2te Auſg.) II Th. p. 646—662.

NOTE [H], page 150.

It ſeems a remarkable circumſtance, that, although the ſurgeons, here deſignated by the title of the Four Maſters, had acquired great repute in their life-time, and had compoſed conjointly a treatiſe on Surgery, which is frequently cited by Chauliac; yet few particulars are known reſpecting them, and their names are buried in oblivion. The following relation is extracted from the *Index Funereus Chirurgorum Pariſienſium* by M. de Vaux.

" Eodem tempore (circa annum 1310) florebant Pari-
" ſiis quatuor inſignes Chirurgi, ſub eodem tecto ſolitarie
" degentes, et a contemporaneis ſcriptoribus ſub nomine
" Quatuor Magiſtrorum deſignati; ſed eorum nomina ad
" nos uſque non pervenerunt."

" Scitur tantummodo, veteri traditione, viros fuiſſe doc-
" trina et pietate ſpectabiles, qui ſeſe invicem, meræ ſub
" charitatis vinculo, pauperum vulneratorum et infirmorum
" chirurgicæ tractationi alligaverant, et de univerſa chi-
" rurgia tractatum ſecundum Empiricam methodum con-
" junctim ſcripſerant, a Chauliaco laudatum, cujus manu-
" ſcriptum exemplar, ſed valde lacerum, et tineis pene
" exeſum, paucis abhinc annis in Bibliotheca Regiæ Na-
" varræ viſebatur."

As the work of Guy de Chauliac is ſcarce, and, I believe, little known in this country, I ſhall ſubjoin the account which he gives of the principal ſects of ſurgeons in his time, as quoted by Queſnay.

" La premiere Secte fut de quatre Maîtres, de Roger et
" de Roland, qui indifféremente a toutes playes et apoſthemes
" procuroient ſanie, ſuppuration avec leurs bouillies et
" paparots, ſe fondant ſur cela du cinquiéme des aphoriſmes,
" *Les laxes ſont bons, et les crus mauvais.*"

" La ſeconde fut de Brunus et de Theodoric, qui indif-
" férement deſſéchoient toutes playes avec du vin ſeul, ſe
" fondant ſur cela du quatriéme de la Thérapeutique; *Le*
" *ſec approche plus du ſain, l'humide du non ſain.*"

" La troiſiéme Secte fut de Guillaume de Salicet, et de " Lanfranc, qui voulant tenir le milieu entre eux, y procu" roient ou panſoient toute playes avec onguent, et emplâtres " douces, ſe fondant ſur cela du quatorziéme de la Théra" peutique; *que la curation a un moyen qui ſoit traitée* " *ſans fraude et ſans douleur.*"

" La quatriéme Secte eſt de tous les Gend'armes, ou " Chevaliers Teutoniques, et autres ſuivans la guerre; leſ" quels avec conjurations et breuvages, choux, huile, laine, " panſent toutes playes, ſe ſoudant ſur cela; *que Dieu a mis* " *ſa vertu aux paroles, aux prieres, et aux herbes.*" See *Recherches ſur l'Origine et ſur les Progrés de la Chirurgie en France*, p. 60-3, 4to.—Paris, 1744.

NOTE [I], page 176.

Although I am very ready to admit, that Hobbes, Locke, and Condillac, may, in certain points of view, be regarded as ſucceſsful followers of the Inductive path of reſearch, it appears to me doubtful how far the unqualified aſſertion, that they have all "*improved upon the views of Bacon*," is conſiſtent with the truth. Hobbes, in particular, who, in his youth, is known to have lived on terms of intimacy with Bacon, was ſo far from recommending the experimental method of inveſtigation, which the latter had ſtrenuouſly inculcated, that, whether from a belief of its inadequacy to the end propoſed, or from ſome more ignoble motive, he uſed no ſmall pains to bring it into diſrepute, inſinuating, that the ſtudy of the ſpontaneous operations of Nature was alone ſufficient for the conſtruction of a true ſyſtem of phyſics. In his *Dialogus Phyſicus de Natura Aëris*, written with a view to controvert Mr. Boyle's opinions reſpecting the preſſure and elaſticity of the atmoſphere, and publiſhed in the year 1661, he ridicules the Members of the Royal Society for their attention to experiments,

ments, and affirms, that the moſt illiterate mechanics were equally entitled to the appellation of *philoſophers*, and that the only difference between the two was, that the latter confeſſed their ignorance, but the former would not confeſs theirs. All the errors, however, into which they had fallen, are diſcovered by him to proceed from their rejection of his hypotheſis of Circular Motion; "ſine qua "hypotheſi," he tells them, "quantuſcunque labor, ars, "ſumptus, ad rerum naturalium inviſibiles cauſas inveniendas adhibetur, fruſtra erit." p. 8. In another part of his Dialogue, he triumphantly aſks; "Quorſum tantus apparatus et ſumptus Machinarum factu difficilium, ut eatenus tantum prodiretis quantum ante prodierat *Hobbius*? "Cur non inde potius incepiſtis ubi ille deſiit? Cur Principiis ab eo poſitis non eſtis uſi? ——Ad cauſas autem "propter quas proficere ne paululum quidem potuiſtis, nec "poteritis, accedunt etiam aliæ; ut odium *Hobbii*, quia "nimium libere ſcripſerat de Academiis veritatem. Nam "ex eo tempore irati phyſici et mathematici veritatem ab "eo venientem non recepturos ſe palam profeſſi ſunt.—— "Et quod pauciſſimi ſunt eorum qui ſcientias profitentur, "qui veritates difficiles ab aliis quam a ſe inventas eſſe, non "doleant." p. 23.

At the ſame time I am aware, that many paſſages may be quoted from Hobbes' works, in which doctrines of a very different tendency are maintained and exemplified. But it will be difficult to find an excuſe for the arrogance, petulance, and illiberality, of the above and other ſimilar remarks; eſpecially, if we conſider, that they were adduced in ſupport of a vague hypotheſis, which was in contradiction to facts, and which had been already diſproved by the moſt ſtriking and concluſive experiments,—the experiments of Torricelli, of Paſcal, and of Boyle!

NOTE

NOTE [K], page 278.

AS affording an example of the ſucceſsful application of the Analytical Method to the ſtudy of Medicine, I beg leave to refer the reader to Dr. Darwin's account of the Diſeaſes of Aſſociation, and particularly to his Theory of Fever. It is not as explaining the phenomena of the febrile ſtate upon any particular hypotheſis, that this theory ought to be conſidered; but as preſenting a clear and ſyſtematic expoſition of the principal ſymptoms, in which their developement is traced, and their mutual connection determined. Viewed in this light, it bids fair to become, one day, the foundation of a ſyſtem, "which," as the author has with juſt confidence expreſſed himſelf, "may not moulder, like "the ſtructures already erected, into the ſand of which "they were compoſed; but which may ſtand unimpaired, "like the Newtonian Philoſophy, a rock amid the waſte of "ages!"—At the ſame time it muſt be acknowledged, that his explications are far from complete; that they contain ſome inconſiſtencies, and may admit of many important corrections and improvements. But abſtracting from theſe conſiderations, they will be found, I believe, to exhibit the moſt beautiful ſpecimen of *induction* which the ſcience of medicine can boaſt, and ought certainly to be ſufficient to reſcue the fame of the author from that oblivion which ſeems to threaten his other theoretical writings.

THE END.

PRINTED BY BYE AND LAW, ST. JOHN'S SQUARE, CLERKENWELL.

RB 2.12.1941